REPORT

OF THE

MEDICAL DEPARTMENT

The New York Hospital

and

Cornell University Medical College

FOR THE FIVE-YEAR PERIOD

1942 through 1946

by

DAVID P. BARR, M.D.

THE SOCIETY OF THE NEW YORK HOSPITAL
525 EAST SIXTY-EIGHTH STREET
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REPORT OF THE DEPARTMENT OF MEDICINE

OF

THE NEW YORK HOSPITAL AND CORNELL
UNIVERSITY MEDICAL COLLEGE

FOR THE YEARS 1942 THROUGH 1946

By

DAVID P. BARR, M.D.

To the President of the Board of Governors of the New York Hospital and the President of the Board of Trustees of Cornell University:

This report covers the five-year period from January 1, 1942, to December 31, 1946. Its beginning coincides with the time when the writer assumed active charge of the Medical Service and was little less than a month after the disaster of Pearl Harbor. It followed by only a few days the death of Dr. Walter L. Niles, whose balanced judgment and wise counsel were sadly missed at a crucial time. During 1942 seventy-two of the 181 physicians of the Medical Department joined the armed forces or left to engage in other activities concerned with the national defense. By July 1943 almost one-half of the staff members had departed and more than one-third of them were in uniform. Many of those who remained spent a considerable part of their time on the war effort either in committee work or on contracts with the Medical Research Council or the Office of Scientific Research and Development.

Although the Department was fortunate in retaining several of its more experienced and resourceful members, the period of the war was one of constant improvisation with the chief effort directed to the maintenance of the excellent precedents established by Dr. Eugene F. DuBois and with only occasional opportunity for improvement or for development of new enterprises. Return of the staff commenced shortly after V-J Day and by March 1946 was almost complete but it was only during 1946 that plans for extension of work could be formulated with reasonable hope of fulfillment.

STAFF. The deaths of three members of the Department of Medicine are recorded with sorrow. Dr. Samuel W. Lambert, for many years consultant physician to New York Hospital, died on February 9, 1942; Dr. Fielding L. Taylor, consultant in syphilology, on June 22, 1942; and Dr. Dan H. Witt, an assistant attending physician to the Hospital and an instructor in medicine at Cornell University Medical College, died at the height of his career on February 15, 1942. As medical officers members of the Department saw action in many parts of the world. Dr. A. Whitfield Hawkes, a member of the staff in neurology, lost his life from tsutsugamushi fever while serving as an officer in the New York Hospital Unit in New Guinea. His loss is mourned by his many friends in the Department of Medicine and in the entire institution. It is remarkable and a cause for gratitude that no other member of the Department was killed, seriously wounded, or permanently disabled. With few exceptions they have returned with increased zest to their former tasks in the Hospital and Medical College.

During 1946 three important additions were made to the senior staff. These were Dr. Richard H. Freyberg, an authority on the subject of arthritis, who was formerly assistant professor of medicine and director of the Rackham Arthritis research unit at the University of Michigan; Dr. Robert F. Watson, who was formerly resident physician at the New York Hospital and later an associate on the scientific staff of the Rockefeller Institute for Medical Research; and Dr. Irving S. Wright, formerly director of the Department of Medicine at New York Post-Graduate Hospital, and nationally recognized as a leader in the investigation of peripheral vascular disease.

At the end of the war the Board of Governors of New York Hospital decided to increase the number of the medical house staff from 18 to 31 members. This wise action has provided educational opportunity for many returning veterans and has already resulted in greatly improved service in the outpatient department and in the private and semiprivate pavilions.

On December 31, 1946, the staff consisted of 13 physicians on a full-time basis at New York Hospital, 3 on a full-time basis in the Second Medical Division at Bellevue Hospital, 31 house officers, 12 physicians serving as clinical or research fellows and 119 staff members engaged on a part-time basis in one or more activities of the Department. The total of 178 does not include the 32 medical members of the courtesy staff of the Private Service many of whom seldom exercise their privileges and none of whom aid in teaching or in the wards or outpatient departments. In addition to the physicians, a large non-medical group is occupied in the work of the Department. Exclusive of the 58 members of the technical staff of the Central Laboratories which are supervised by the Medical Department but not operated under its budget, there are two research chemists, one biologist, one physiologist, one pharmacologist and 45 technical and secretarial assistants.

Reconstruction and Rearrangement

The program of reconstruction undertaken by the hospital to provide additional private and semiprivate beds led to many rearrangements. In 1945, the two general medical wards were moved from the third to the fifth floor and the neurological ward was moved from the second to the sixth floor in the G-wing. The laboratories for neurology were located in space adjoining the neurology ward and an electroencephalographic station for the use of the main hospital was incorporated in the suite. The routine chemical laboratory which had been excessively crowded was enlarged and rearranged. A much needed room was added to the routine bacteriology laboratory. The blood bank and serological laboratories were moved to remodeled quarters. A new and very attractive lecture room for the Department of Medicine was built in F corridor on the fifth floor to take the place of the third floor lecture room which was dismantled to make space for semiprivate prooms. Larger quarters were obtained for the basal metabolic unit by utilizing space at the end ward H-5. The officers for the Physician-in-chief were rearranged and improved, the Departmental Library was enlarged and considerable increased storage space was provided. On the second floor the removal of the basal metabolic unit permitted much needed enlargement of the research chemical and metabolic laboratories. In these extensive changes the Department of Medicine lost no clinical facilities, and added slightly to its utilizable laboratory space. The reconstruction for private and semiprivate rooms, however, absorbed all of the remaining unutilized space in the main hospital and closed the way for expansion of laboratory facilities which will be sorely needed in the near future.

SCOPE

At the New York Hospital, the Department of Medicine had in 1946 clinical responsibility for 152 ward beds, an increase of 39 over the number assigned to it in 1942. As previously it has been responsible for numerous consultations in other departments and for the service in medicine and medical specialties in the large Outpatient Department. Since July, 1942, it has been accountable for the general conduct of the very active private and semi-private services. It has been occupied each year with the teaching of some 250 students from the sophomore, junior and senior classes of the Cornell University Medical College and with the graduate training of internes, residents and fellows.

At Bellevue Hospital the Department has been responsible as previously for the staffing and conduct of the Second Medical Division. At present this includes approximately 100 medical beds, 40 neurological beds and an active outpatient department in medicine and medical specialties. It is also charged with the graduate training of a house staff of 20 members. Since April 1946, the Department has undertaken to provide a formal graduate course for veterans.

Over and above these duties of clinical care of patients and undergraduate and graduate instructions of medical students and physicians, the Department has the responsibility of affording to selected and especially able men the opportunity of training in special fields and of development as teachers and productive investigators. This phase of the work, held somewhat in abeyance during the period of the war represents in an institution as well equipped and endowed as the New York Hospital-Cornell University Medical College a primary outstanding obligation which has been reassumed as rapidly as possible during 1946.

CLINICAL RESPONSIBILITY

A. *Wards* A number of changes were made during the five-year period. In August 1942, a long needed ward was opened for the care of neurological patients. In the general medical ward for men, rearrangements in the spacing of beds permitted accommodation of 8 more patients. In 1944 the capacity of the metabolism ward was increased from 6 to 8 beds. A comparison of the size of the service in 1942 and 1946 is as follows:

	1942	1946
General Medical Ward for Men	29	37
General Medical Ward for Women	29	29
Isolation Ward	19	19
Tuberculosis Ward	30	30
Neurological Ward		29
Metabolism Ward	6	8
	113	152

The number of admissions to the wards, the total number of patient days and the percentage of occupancy for each of the five days are shown in the accompanying table.

	1942	1943	1944	1945	1946
Number of admissions	1,646	2,003	2,038	1,946	1,986
Total patient days	35,446	41,575	44,062	42,501	47,485
Percentage occupancy			88	81	85

The number of patients transferred from the Outpatient Department or Emergency Station constituted 63.4 percent of the wards admissions in 1942 and 79.9 percent in 1946. Patients referred to the wards from private physicians constituted 21.5 percent of the total admissions in 1942, and 10.2 percent in 1946. The average time spent by patients in the wards was 21.5 days in 1942, 21.5 days in 1945 and 23.9 days in 1946. The increase was due in large part to the prolonged sojourn of patients receiving streptomycin therapy on the tuberculosis ward and of patients admitted to the metabolism ward for study. The average stay of patients on the other wards of the service was only 19 days in 1946.

The organization of the ward services has not been significantly changed during the period and is essentially that which was formulated at the time the hospital was opened.

Each ward is in charge of an attending physician who is responsible to the physician-in-chief for the care of the patients in his division of the hospital. Ordinarily Dr. Harold G. Wolff has been assigned the care of patients in the neurological ward; Dr.

Walsh McDermott that of the patients in the infectious unit; Dr. Carl Muschenheim has been in charge of the tuberculosis ward; and Dr. Ephraim Shorr has directed the activities of the metabolism unit. On the general medical wards for men and women, staff physicians undertake supervision in rotation for periods of one to three months. Usually and when sufficient help has been available, one assistant resident and two internes have been assigned to the neurological ward and to each of the two general medical wards. On the infectious disease unit and the tuberculosis ward one assistant resident and one interne for each service constitute a sufficient house staff. Students in the junior class at Cornell University Medical College rotate through the medical wards and aid under supervision in securing histories and performing the routine laboratory work. In the early morning of each day joint rounds of assistant residents and internes are held. Rounds by the attending physicians are made daily except Sunday and follow the earlier rounds of the house staff.

The opening of a *neurological ward* has had a significant influence on neurological teaching and in the training of the house staff and has made possible a more effective organization for the diagnosis and care of patients with diseases of the nervous system. It has permitted a closer association between the neurologists of the medical service and the neurosurgeons. From the time of its inception it has enjoyed the help and enthusiastic co-operation of Dr. Bronson Ray. Although patients of neurological interest have first call on its beds, the ward is not exclusively devoted to their needs, for it has been a guiding principle of the service that neurology should be an integral part of general medicine and that there should be no geographic or intellectual isolation of the facility. The attending neurologist holds rounds from 10 to 11:30 each weekday morning and reviews and examines every patient admitted to the ward after the members of the house staff have completed their own examinations. Each Friday throughout the year Dr. Harold Wolff has a conference with the staff to consider special problems. This is a much appreciated function and is eagerly attended by all medical house officers.

Only a few hospitals are so fortunately equipped for the care of infectious diseases as is New York Hospital and the *Infectious Disease Unit* on ward G-4 is envied by many institutions. While an essential part of the medical service, it represents a hospital facility and has been used for the care of patients from all parts and divisions of the hospital. It is an invaluable adjunct in the teaching and investigation of infectious diseases. In its development it should form an admirable nucleus for epidemiological study and for closer correlations with the Department of Preventive Medicine. During the war period it has usually been under the able leadership of Dr. Walsh McDermott but at times has been guided by Dr. Claude Forkner, Dr. Charles Wheeler or more recently by Dr. Robert Watson. Not infrequently the ward rounds have been attended to the great benefit of the service by Dr. Thomas Magill of the Department of Bacteriology and Immunology.

The *tuberculosis ward,* H-4, has continued to be of the greatest aid in teaching the natural history and management of tuberculosis and the preventive aspects of infectious disease. Throughout the period it has been under the guidance of Dr. Carl Muschenheim whose conservatism, mature clinical judgment and admirable teaching constitute one of the great assets of the Department of Medicine. Its correlations with the Pulmonary Clinic in the Outpatient Department and with the Kips Bay District Health Center are of importance in the development of the institution. More recently this ward has been utilized for investigation of the toxicity of streptomycin and of the potentialities of this new drug in the treatment of clinical tuberculosis. If it had never had any other function, this research alone would have justified the existence of the unit and the relatively large expense required in maintaining it.

The *metabolism ward,* so carefully instituted and organized by Dr. Eugene F. DuBois, has maintained its high standard under the direction of Dr. Ephraim Shorr. By providing facilities for exact metabolic studies it constitutes one of the most important adjuncts of the medical department. During the period from 1942 to 1946 it made possible significant contributions on convalescence, nephrolithiasis, citric acid metabolism, the effects of thiouracil and other antithyroid drugs, the control of osteoporosis in post-menopausal states, myasthenia gravis, myotonia and other conditions. In such a unit the nursing is of crucial importance. This was directed until late in 1946 by Miss Elizabeth Curtain to whom gratitude is due for her meticulous care and constant co-operation in the conduct of these many studies. Great credit is due also to Mr. Vincent Toscani who supervises the adjoining laboratory of the Russell Sage Institute of Pathology and who has been responsible for most of the chemical determinations of the metabolism ward.

B. *Private Service* Beds for private and semiprivate patients have been insufficient for the requirements of the staff and have been continuously occupied during the entire period. The total capacity in the main hospital is 199 beds and has been shared by the Departments of Medicine and Surgery, the distribution varying during the period according to immediate needs. Ordinarily medical patients have constituted about one half of the total. In 1942, there were 1431 medical admissions which may be compared with 1659 in 1944 and 1504 in 1946.

Until July 1942 the private and semiprivate services were staffed by 2 resident physicians appointed by a special Private Service Committee. From the standpoint of organization, these men were responsible to the Committee and were entirely separate from the resident staff of the wards, who were under the direction of the Physician-in-Chief. With so large a service, a staff of 2 residents was never more than sufficient to cover the bare essentials of records and emergencies and it was expected that the routine care of the patients while they were in the hospital would be undertaken by the physicians who referred them. During the war no house staff for private services were permitted by the Office of Procurement and Assignment and it therefore became necessary for the internes and residents who had been engaged for the ward services to assume also the care of the private patients. At the same time responsibility for the conduct of the private service was transferred from the special Private Patients Committee to the Physician-in-Chief. The double assignment of house officers constituted a precarious situation which became more unsound as the overworked physicians of wartime had less time to devote to each of their private patients. During 1944 and 1945, therefore, four members of the senior class at Cornell, selected because of their high scholastic standing and ability were appointed to aid the resident staff in the care of private and semiprivate patients. As an emergency measure this was found to be a thoroughly feasible arrangement which greatly improved the quality of the service and was in general appreciated both by the patients and their attending physicians.

When in April 1946 a full staff had been reassembled, student participation was discontinued and a house staff consisting of one resident, two assistant residents and five internes was assigned to the private and semiprivate services. By thus increasing the house officers several very desirable objectives were accomplished. The careful and thorough examination of each patient was assured, adequate contact between the house staff and the responsible physicians was made possible and an admirable training ground was established for an additional number of excellent veterans.

During the latter months of 1945 and all of 1946 supervision of the private and semiprivate services of the medical department was assigned to Dr. Paul Reznikoff. As director of this important enterprise he is responsible not only for its general conduct but also for the instruction and training of the internes and residents who were assigned to it.

This obviously desirable development represents a departure from custom which as yet has been attempted by only a few hospitals. It is hoped that the training of house staff on the private services may soon be made as effective as it now is in the wards. Aside from the better care of patients, such a demonstration is much needed since there is a dearth of adequate residencies for the training of internists, and the development of private services for teaching could offer opportunities for a large number of medical graduates who at present are unable to obtain positions in excellent hospitals.

C. *Outpatient Department* It was in this department that the greatest difficulty was encountered during the period of the war. The examination of patients referred to the medical service for diagnosis is extremely time-consuming. Usually not less than one hour is necessary for the consideration of each new patient. Revisits ordinarily require 15 to 20 minutes. In the conduct of such work the departure of the staff was particularly crippling since the time of many physicians is required each day. All of the clinics were undermanned. The degree of limitation can be judged by scrutiny of the general medical clinics. In the first half of 1941 at a time when the professional staff was intact, there were an average of 592 doctor-sessions each month. In the comparable period of 1942, the doctor-sessions averaged 329, while in the last six months of 1942 the average was only 191. During the following war years, 1943 to 1945, the monthly average never exceeded 222. Although the attendance of patients in the Outpatient Department was diminished, the work of each physician was at times almost doubled.

In the conduct of the work and in the maintenance of standards during a most difficult period, the greatest credit is due to Dr. Connie M. Guion who was in active charge of the Medical Outpatient Department. The gratitude of everyone who is interested in the New York Hospital should also be expressed to the many physicians, both men and women, who cheerfully and loyally gave to the medical clinics all of the time they could spare from their many other obligations.

During the period, there was a decrease both in the number of new patients and in the total visits to the medical clinics. To some degree this was due to the shortage of physicians and to the failure to care completely for the normal load. There were however other factors which contributed to the lessened attendance and for this reason, the statistics of the new admissions and total visits both for the medical clinics and the whole Outpatient Department are given for the thirteen years since the new hospital was opened.

Year	New Adm. in Med.	New Adm. in OPD	Total Visits in Medicine	Total Visits in OPD
1933		26,704		203,603
1934		26,590		213,116
1935	8,828	27,367	75,729	253,497
1936	8,696	27,531	83,954	270,950
1937	8,335	26,369	96,526	294,831
1938	7,517	24,590	103,710	313,331
1939	6,448	23,031	105,662	319,163
1940	6,625	22,034	110,544	320,283
1941	6,207	21,743	104,468	311,655
1942	4,751	18,872	90,208	282,787
1943	5,923	19,028	88,882	266,780
1944	4,983	17,991	76,945	255,856
1945	5,073	17,514	76,123	255,261
1946	5,481	20,058	83,452	281,628

This table deserves some analysis. It will be seen that the influx of new patients which started as soon as the hospital opened its doors in 1933, reached its peak of 27,531 in 1936. Thereafter, a steady decline was apparent. In 1941, the year before the war started and at a time when the professional staff was maximal, only 21,743 new patients were admitted. In the Department of Medicine the maximum volume of 8,828 attained in 1935 had shrunk to 6,207 in 1941. It appears that the decline in admissions of new patients had started five years before the war and had been steadily progressive. Actually the decline in new patients admitted to the medical department was much greater in the five years from 1936 through 1940 than in the same interval from 1941 through 1945.

Perhaps it should be added that the medical department shared but did not lead in the shrinkage in the admissions of new patients.

	1937	1941	1945
Medicine	8335	6207	5073
Surgery	9861	8417	7014
Gynecology	1780	1827	1222
Obstetrics	2105	1418	1150
Pediatrics	3534	3608	2870

The factors controlling the variations in total visits are quite different. The acceptance of any new patient implies continuing responsibility and may necessitate from one to many revisits continuing over weeks, months or years. Thus, the number of total visits in an outpatient department tends to increase at a greater rate than the number of new admissions and may continue to increase for a considerable period after the number of new admissions has become stationary or has actually diminished. The total visits to the clinics did not reach a maximum until 1940, five years after the peak of new admissions had been attained. The subsequent decline was no doubt in part due to the steadily decreasing number of new patients. Another factor however almost certainly played a role. Until 1942 with a large staff it was possible to see patients at frequent intervals, while under the conditions of war only most necessary revisits were encouraged.

From the inspection of the attendance records either of new patients or total visits, it appears that the usage of the Outpatient Department has decreased and since this is a matter of the utmost importance both to the service of the hospital and teaching of the institution, its causes should be sought.

Insofar as the district immediately adjoining New York Hospital is concerned, it might be expected that the greatest number of new patients would be received during the first few years of the operation of the clinics. It is true, however, that not more than 16 percent of the clientele comes from the adjoining district and that the remainder is drawn from the almost inexhaustible metropolitan area. Other causes must be sought. It is possible that in the years between 1936 and 1941 with the total visits ranging from 270,950 to 313,801, the care of revisits may have discouraged to some extent the reception of new patients or have delayed their examinations sufficiently to lead to their discouragement. Probably more significant however are economic factors of the time. The years from 1933 to 1936 or 1937 represented the depth of the depression when unemployment and medical indigency were at a maximum. With the return of better times and particularly during the war period of almost universal employment at high wages, many patients who had previously sought clinic aid returned to private physicians. Many former patients left the district or the city to seek work in outlying or distant war time factories. Still others who during the discouragement of unemployment sought medical aid for trivial complaints found themselves too occupied to visit a clinic.

Study of the trend during 1946 throws additional light on the situation and offers ground for encouragement. Attendance of staff was almost as great as in the period before the war. Beginning in the first half of the year there was a distinct increase in the new admissions in the Outpatient Department as a whole and in the medical department.

		Entire OPD	Medical Dept.
1945	January to June	8,644	2,519
	July to December	8,870	2,554
1946	January to June	10,062	2,634
	July to December	9,996	2,847

Obviously there has been a sharp upswing which is only partially attributable to the increase in staff.

During the last year with a more normal staff of senior physicians and a greater staff of residents, the organization of the clinics has taken on a form which resembles that of the pre-war period but which possesses a number of new features that should tend to make it more effective.

Admitting and Open Clinic. At the entrance of the Outpatient Department an assistant resident has been stationed to work with a man of similar rank from the Department of Surgery in sorting new patients and in routing them to the stations where they can best be examined and treated.

In addition to the teaching clinic in general medicine, a feature of the Department, since 1932, a general facility has been established which is in operation from 9 A.M. to 5 P.M. This is an open clinic for the care of those who present themselves to the admitting physician but who for one reason or another cannot or should not wait for later appointments in the teaching or special clinics. This corresponds in purpose and in operation to the open clinic long maintained by the Department of Surgery.

The teaching clinics are composed of teams of one instructor or senior physician with two students. The morning teaching clinic is thus composed of 10 students and 5 instructors; the afternoon clinic of 8 students and 4 instructors. Since each student is assigned one new patient each morning and each afternoon, this means that a total load of 18 new patients can be handled each day of the teaching clinic. Each team is charged also with the care of the return visits of patients whom they have previously examined.

The capacity of the open clinic is more extensible and is averaging about 10 per day. Lack of space limits the growth of the General Medical Clinics beyond this load, and it appears probable that unless additional quarters can be found, the capacity of the General Medical Clinics cannot exceed 30 new patients and 50 to 60 revisits each working day.

Special Clinics. These are to be distinguished from the general clinics just described. They serve a number of indispensible functions and have been established for one or more of the following purposes.

a) For the continued care of patients having special problems. Unless new patients have very obviously classifiable defects they are usually examined in the General Medical Clinic where evaluation of their total problems may be made. At the end of this examination, it will be obvious in many instances that their continued care can best be pursued in one or another of the special clinics where there have been assembled special facilities and physicians best fitted by previous experience to treat them.

b) For graduate teaching of internes, residents and fellows in special branches of medicine. By means of such clinics men who are training themselves as physicians may in a few months gain more experience in a special field than they could acquire in as many years in a general medical clinic or in the private practice of medicine.

c) For the administration of treatments requiring elaborate apparatus or unusual experience. It is for this reason that special clinics for the care of syphilitics and for those suffering from allergic diseases have been found necessary in all large outpatient departments.

The Department of Medicine, like many other similar departments in this country, has followed the custom of establishing special clinics whenever one or more of these purposes can be effectively served. In 1942, eleven special medical clinics were in operation as follows: allergy, arthritis, cardiology, dermatology, diabetes, endocrinology, gastroenterology, hematology, neurology, pulmonary and syphilis (Medicine L). All of these were continued in spite of varying loads and general shortage of physicians throughout the period of the war. In 1946 two additional clinics were established, one designated Medicine A for the study of psychosomatic problems, and the other for the purpose of providing better care for patients suffering from peripheral vascular diseases. All of these special enterprises deserve some comment.

Allergy Clinic. Hay fever, asthma, urticaria, and other conditions dependent upon sensitization are among the commonest of human ills. Indeed it has been estimated that approximately 10 per cent of the entire population suffers at one time or another from some allergic symptoms. Incapacitating and frequently recurring, allergic diseases require expert diagnosis and prolonged treatment by special methods which cannot be undertaken in a general clinic. The Allergy Clinic has long been one of the largest in the Outpatient Department, its total visits ranging from 13,660 in 1942 to 13,118 in 1946. It is one of the services in which the case load did not diminish during the period of the war. Dr. Horace Baldwin has conducted this clinic since the opening of the new Hospital, often with insufficient help and with spatial arrangements that are far from ideal. During all of this time he has been able to maintain a spirit of investigation which has gone far beyond the mere routine of diagnosis and treatment. During 1946 it has been possible to assign to the Allergy Clinic members of the House Staff on a rotating basis, thereby aiding the development of the enterprise and greatly enriching the experience and the scope of clinical training of the participants. The Allergy Clinic is one of the activities of the Department of Medicine which deserves further development and closer integration not only with other clinics and the wards, but also with the Department of Immunology in the Medical College.

Arthritis Clinic. This clinical activity was established and for many years was directed by Dr. Russell L. Cecil. At the time of his retirement in 1946 it was taken over by Dr. Richard H. Freyberg, whose position as Physician of the Hospital for Special Surgery opens the way for co-operation between the two hospitals. Arrangements have been made by which workers in the Arthritis Clinic may have access to the large arthritic service of the Hospital for Special Surgery, and to the laboratories and investigations which Dr. Freyberg is now conducting in that institution. Experience indicates that diseases of the joints constitute the commonest cause of chronic disability, and that arthritic patients cannot be optimally treated in general medical clinics. The hospital therefore performs an important service to the community in maintaining and fostering this enterprise.

Cardiology Clinic. Because of the prevalence and chronicity of diseases of the heart, a separate station for their study and long-term care is desirable in any large outpatient department. This enterprise has been under the direction of Dr. Harold Stewart with the advice and aid of Dr. Cary Eggleston and Dr. Harold Pardee, both experienced consultants in diseases of the circulation. It is conducted in conformity with the aims of the American Heart Association, and as such forms a part of a national program for the study of cardiac conditions. It is utilized extensively for the instruction of medical students, for the training of the resident staff, and as a locus for effective graduate teaching. It provides for many patients expert guidance over long periods of time. There were 3910 visits in 1942 to be compared with only 3551 in 1945. During the last year, however, the number of visits increased to 5394, and the active case load consisting of 742 patients at the end of December 1945 rose to 1024 in December 1946. This attendance approaches the maximum which can be accommodated in the quarters and facilities which have been assigned to the activity.

Dermatology Clinic. From the standpoint of attendance this is one of the largest clinics in the medical outpatient department, the total visits ranging from 11,415 in 1942 to 13,169 in 1946. The amount of clinical work is imposing. In 1946, 2234 new patients presented themselves. Procedures included 1497 Xray treatments, 312 applications of ultra-violet radiation and 131 electrolytic treatments. There were also 798 examinations for fungi and 139 biopsies. Photographs of 177 patients were taken. The Dermatology Clinic has always been insufficiently staffed and has received less than adequate support. In spite of this Dr. George M. Lewis who has been in charge, has been able to maintain a high standard of clinical management, to fulfill the requirements of a heavy teaching schedule and to institute some studies of great interest. In this work and particularly in his investigations he has had the invaluable assistance of Miss Mary Ellen Hopper, a mycologist of expertness and resourcefulness. In 1946 the clinic has been considerably strengthened by the appointment of a dermatological intern and by the reception of two graduate students, both of whom spend half time in the institution as trainees for certification by the American Board of Dermatology. It is hoped that these additions to the staff and others that are contemplated will serve not only to advance the work of the clinic but also permit closer integration between dermatology and other sections of the medical department.

Diabetes Clinic. This is a relatively small station and not a few of the milder diabetics in the Outpatient Department are treated in the General Medical Clinics. The service has been chiefly used for the instruction and long-term care of a group of patients who require frequent medical advice or constant supervision. The clinic has enjoyed the enthusiastic cooperation of the Dietetics Department under Miss Margaret Gillam, and later under Miss Louise Stevenson. A dietitian is always in attendance. The station is important in the instruction of dietitians, nurses, medical students and interns, as well as the diabetics themselves. It is under the direction of Dr. Edward Tolstoi, a teacher of great experience in the care of diabetic patients. During the course of years he has made in the clinic important observations on a simplified management and a more liberal diet for diabetics, a procedure which has been much discussed and often criticized by other specialists in the subject, because of the fear that deviations from strict and rigid control might lead to later complications. It is gratifying to report that thus far the dire consequences prophesied by Dr.

Tolstoi's critics have not become evident. In the meantime a particularly well satisfied and healthy looking group of diabetics have been cared for.

Endocrine Clinc. Under the direction of Dr. Ephraim Shorr this is one of the more significant of the clinical enterprises in the Department of Medicine. Comprising among its patients all varieties of endocrine disorders, it is a rich source of teaching material for undergraduate and graduate students and for the in-patient and out-patient department services. Its work is closely correlated with the activities of the Russell Sage Institute of Pathology of which Dr. Shorr is an associate, with the chemical laboratories of the Department of Medicine and with the Metabolism Ward. It has been constantly productive of a large amount of clinical investigation. Subjects under scrutiny include the application of the vaginal smear method to the diagnosis and treatment of disturbances in female sex physiology, the hormonal therapy of the menopause, the relative potency of natural and synthetic estrogenic agents, methods of biossay in the human of estrogenic and gonadotrophic preparations, the psychological concomitants of ovarian insufficiency in the menopause and during the menstrual cycle, male sterility, the pathogenesis of nephrolithiasis, the clinical manifestations of tetany and hyperparathyroidism, the treatment of Graves' disease with thiouracil and other antithyroid compounds, and the excretion of 17 ketosteroids in diseases of the ovaries, adrenals, and pituitary.

During 1945 and 1946 the clinic was greatly strengthened by the addition of Dr. Eugene Cohen and Dr. Anne Carter to the staff of full time workers in the field of endocrinology. The clinic has enjoyed the cooperation of the Department of Psychiatry and of the Urological Service of the Surgical Department. During the past two years assistant residents in gynecology and obstetrics assigned by Dr. Stander have contributed to its successful operation.

At noon on Fridays an endocrine conference has been established. This permits presentation of endocrine and metabolic problems to a large group of the medical staff and students and furnishes a forum for those working in the subdepartment. The clinic is much used for consultation. It also attracts many visitors and students both from this country and abroad. Included among those accepted for long periods of training are the following:

Inez d'Allende	Cordoba, Argentina	Rockefeller Fellow	1 year
Attilio Flosi	San Paolo, Brazil	Fellow of the Institute of International Education	1 year
José Godinho	Lisbon, Portugal		1 year
Amado Sanchez	Mexico City, Mexico	Fellow of the Institute of International Education	1 year
Serge Tolstoi	Paris, France		6 mos.
Francisco DeVenanzi	Caracas, Venezuela		8 mos.

Gastrointestinal Clinic. During the period of the war this clinic was placed under the direction of Dr. Thomas P. Almy and its functions were thoroughly resurveyed. The chief aims of the organization as it now exists are twofold: a) to establish a more complete integration in the activities of medicine, surgery, and radiology in the study of gastrointestinal diseases; and b) to emphasize psychosomatic study in those functional diseases of the gastrointestinal tract which always form the majority of the conditions treated in any gastrointestinal clinic. These aims are in process of being fulfilled. The enterprise has been greatly strengthened by the return from the war of Dr. Louis Hauser, Dr. Reid Heffner, Dr. Michael Lake, Dr. John Twiss and also Dr. Sydney Weintraub who has co-operated through the department of Radiology in conferences, in consultations, and in the training of members of the staff. Encouraging also has been the help and co-operation of many members of the surgical department. The reestablishment of a weekly gastrointestinal conference immediately following one of the clinic sessions has also been helpful in consolidating the interest and experience of those who take part in the enterprise. Investigation of the emotional components of organic diseases such as peptic ulcers, and mucous or ulcerative colitis, have been facilitated by the formation of the Psychosomatic Clinic and by the participation of Dr. Beatrice Berle and other members of that organization. In 1945, special arrangements were made for the management of ambulant patients suffering from hepatic diseases, an enterprise which was placed under the supervision of Dr. Daniel Labby. This is operated as a part of the Gastrointestinal Clinic. It is in this section also that Dr. Arthur Grace sees his patients with lymphogranuloma venereum.

Hematology Clinic. This station which has been open only once a week has undertaken the care of a large number of patients with anemia, leukemia, Hodgkins disease, and other lymphomata. Under the direction of Dr. Paul Reznikoff and Dr. Claude Forkner, both recognized leaders in the field, it has fulfilled a significant educational function. Its work is closely correlated with the hematological laboratory conducted by Dr. Reznikoff and with the ward work in diseases of the blood.

Neurological Clinic. This is under the immediate supervision and direction of Dr. Harold G. Wolff and forms a most important part of the elaborate plan for neurological instruction of medical students and house staff. Its organization is admirable and serves as a model to which other clinics may aspire. It is staffed by five neurologists, one neurosurgeon, and one physician who is especially interested in diseases of the muscles. One neurologist is on full-time university status; the others are on a part-time basis but are also engaged in studies of neuropathology, electroencephalography, neurosurgery, neuroanatomy, or biochemistry. The clinic is held three days each week. During the fourth year each student at Cornell University Medical College spends six clinic sessions or a total of 18 hours in the neurological outpatient department. Five men are assigned at any one time to the clinic for a period of two weeks. Each student is given a patient and is assigned to a member of the clinic staff who acts as his instructor. He spends the first hour and a quarter alone in securing a history and making an examination of his charge. He then presents his data and formulation to his instructor who reviews the findings, diagnosis, and recommendations for management. One instructor is responsible for one student and his new patient and for four revisits. The teaching in the neurological outpatient department is focused on the management of the whole patient. The student is taught to consider in addition to the disorder of the nervous system the patient's life situation, his emotional reactions, and his attitudes toward his disease. The role of life situations, emotions and disease are thus reviewed whenever possible in relation to specific problems of illness. During the third hour of the clinic from 4 to 5 on two days each week all of the clinic staff and students convene in conference to review the problems of the day and to consider difficulties in diagnosis, problems of treatment, unusual signs or the result of previous surgical or other therapy. A number of in-patients who were hospitalized after examination in the outpatient department are also reviewed and the results of intensive study are carefully appraised. Visitors are numerous and a large number of the medical house staff are regular attendants at the bi-weekly conferences. The clinic is widely used for reference and consultation, and the number of referred cases is taxing the facilities and space which have been assigned to the activity.

Peripheral Vascular Clinic. The much neglected field of peripheral vascular disease presents many points of therapeutic interest for active investigation. In the past few years these have become more evident with the greater realization of the importance of phlebitis and thrombosis of peripheral veins as etiological factors in the production of pulmonary embolism and death. Also the acquisition of new medical agents and surgical expedients has demonstrated how much the course of peripheral vascular disease can be modified by early diagnosis and appropriate management. Until 1946 the Department of Medicine had no special clinic for this purpose, but with the addition to the staff of Dr. Irving S. Wright it became possible to establish such a station. This is a clinic which merits the joint activity of the Departments of Medicine and Surgery. Already the enterprise has been productive of a greatly increased interest in the subject on the part of medical students and House Staff. It has made possible the appointment of a graduate fellow, and has led to the establishment of a chemical laboratory for purposes of investigation. It promises to be another of the clinical enterprises for which New York Hospital and Cornell University Medical College will be known in other centers and throughout the world.

Psychosomatic Clinic. In every outpatient department there are many patients whose complaints are troublesome and chronic, whose diagnosis is often in doubt, and whose treatment is less than satisfactory. They are in general people who are emotionally maladjusted and ill-fitted to cope with the stress of daily life. They include those who without organic defect are anxious, depressed, and insecure to a degree that they consider themselves ill and more or less incapacitated. Among them are many who have been diagnosed as peptic ulcer, ulcerative colitis, hypertension, or Graves' disease. Their complaints are numerous and insistent. They try the patience of their physicians who seldom have sufficient time to examine and analyze the background of their insecurity. They probably constitute more than seventy-five per cent of the patients who are seen in any outpatient department. The problem of the care of such patients is as old as the practice of medicine and faces every practitioner and every clinic.

At New York Hospital an approach to their care has been made in the establishment of a clinic in the Medical Outpatient Department for the study of emotional factors in disease. This was made possible by a generous subsidy from the Commonwealth Fund for a period of three years. Implemented by this support the Department of Medicine has been able to establish an enterprise which should have far-reaching consequences in the teaching of medicine. The clinic is under the immediate direction of Dr. Harold G. Wolff and is supervised by an internist, Dr. Stewart G. Wolf, and a psychiatrist, Dr. Herbert Ripley. Six Commonwealth fellows and two social workers take part in its activities each morning. In the afternoons the members of this staff are engaged in work on psychosomatic problems of great variety. Late in 1946 the enterprise was greatly strengthened by a generous grant from the Lester N. Hofheimer Foundation to the New York Hospital for the establishment of fellowships and the support of developments in psychosomatic medicine.

The fellows for the enterprise are selected from the ranks of young internists who have had at least 2 years of intensive training under excellent auspices in internal medicine, who have been impressed with the need of stressing emotional factors in the study of disease, and who have displayed in their previous work qualities of leadership and promise as teachers. The fellowships are designed to last for a two-year period. It is hoped and expected that the training will be the means of equipping a small group of young internists with a broad experience in the combined physical and emotional factors in disease, and with the capacity of exerting influence here and elsewhere in the development of a most important aspect of medicine. The recipients of the fellowships are expected to qualify for certification by the American Board of Internal Medicine. Although some of the simpler methods of psychiatry are used in the daily work, the clinic is not intended for the training of psychiatrists.

This enterprise, one of the most important as yet undertaken by the Department of Medicine, has had throughout the help and co-operation of Dr. Oskar Diethelm of the Department of Psychiatry. Obviously it should be one of the most potent factors in the future correlation of the work and aims of psychiatry and medicine.

Already the clinic has attracted many visitors, some of whom have associated themselves with its work. Four physicians of outstanding ability have been added to the staff and have contributed greatly to its development. These are Dr. Beatrice Berle, whose wide training in medicine and social science have been invaluable; Dr. George Draper who has brought to the clinic his stimulating point of view and wide knowledge of constitutional factors in disease; Dr. Andrew Hart whose experience as a teacher and clinician at the University of Virginia has contributed greatly from the time the clinic was started, and Dr. Jacob Bornstein, an honor graduate of Harvard Medical School whose training in medicine and psychiatry has been helpful in the operation of the enterprise.

Pulmonary Clinic. This is under the direction of Dr. Carl Muschenheim, who has been almost entirely responsible for the establishment of a sound and useful service. For many years it has performed an important function in the care of patients who are found at the time of admission to the clinics to be suffering from tuberculosis. Its need has been more evident as better methods and more frequent examinations have increased our ability to recognize the disease in its incipient and more hopeful forms. The recent installation in the Hospital of a photoroentgen unit, an apparatus which permits routine chest X-rays at small costs, has led to the discovery of a greater number of early pulmonary conditions. There has always been a cordial relationship between the Clinic and the district station maintained at the Kips Bay Health Center. This relationship is being fostered and should lead to significant developments in the practice and teaching of preventive medicine. The Pulmonary Clinic also maintains the closest contacts with the ward for chest conditions in the medical service of the Hospital. In 1946 a special resident was appointed to aid in the correlation of in-patient and out-patient activities in this field. In addition to the care of the tuberculous, the clinic is largely occupied with the management of many pulmonary conditions which require both medical and surgical attention. It is encouraging that in the work of the Clinic and in the conferences which are held each week there has been increasing interest and cooperation from Dr. William D. Andrus, Dr. Cranston W. Holman and other members of the Surgical Department.

Syphilis Clinc. This enterprise was modeled to some degree after the clinic for the treatment of syphilis at Johns Hopkins

Hospital. Like its prototype, it is euphemistically called Medicine L. It was initiated at New York Hospital by Dr. Bruce Webster and during the period of the war, while Dr. Webster was in service, was ably conducted by Dr. Walsh McDermott and Dr. Herbert Koteen. It is used constantly in the teaching of medical students and in the instruction of members of the House Staff. It has been the locus for a number of clinical investigations of individual and cooperative nature for the study of aortic insufficiency and of neurological syphilis. More recently it has formed a part of the cooperative study by the U. S. Public Health Service in the use of penicillin in early and in neurological syphilis. During 1946 it has been strengthened by the allocation of a number of beds on the wards, by the appointment of a public health nurse to conduct follow-up on patients and their families, and by the selection of three well-qualified fellows.

Personnel Health Service. In 1942 a Health Service for medical students and employees of the Hospital was set up in specially arranged facilities in Pavilion L-1. This was undertaken as a cooperative project of the Departments of Medicine and Preventive Medicine, and has received support both from the New York Hospital and the Cornell University Medical College, as well as from funds of the two departments. It has been controlled by a Faculty Committee of which Dr. Wilson G. Smillie is chairman. Its establishment and formulation were due in large part to the work of Dr. Carl Muschenheim, who has played a leading role in its development throughout the period. During 1946 it has been directed by Dr. Ralph Tompsett.

This project renders a significant medical service to students and employees and as an object lesson in preventive medicine is of educational value to medical students and to all who attend it. It may be regarded as a pilot experiment in a type of care which should be widely extended in the operation of the Outpatient Department and in the practice of medicine.

Tuberculosis Case Finding Program. This activity initiated previously by Dr. Carl Muschenheim, has been closely correlated with the work of the Personnel Health Service. It includes periodic X-rays for all students in the medical and nursing schools and for all members of the nursing and medical house staffs. In addition, tuberculin tests are performed on all new medical and nursing students. Retests of all previously negative reactions are made on members of the upper classes in the schools. Careful statistics have been assembled on the encouraging results of this work and have been published during the period.

D. *Central Laboratories.* Most of the routine laboratory procedures for the Departments of Medicine and Surgery are performed in the Central Laboratories operated by the Hospital under the general supervision of the Department of Medicine. Some work is also done for the Departments of Obstetrics and Pediatrics. During the entire period the Central Laboratories have been under the direction of Dr. Ralph Stillman, whose administrative ability and resourcefulness have permitted their efficient operation under the great difficulties occasioned by a rapid expansion of the laboratories and by shortage of expert help. The volume of work increased alarmingly during the period from 1942 to 1946, the greatest increment appearing in the year 1946, in October and November of which recorded examinations exceeded 1000 per day. The accompanying table shows the number of tests done in the various laboratories in the years 1942, 1945 and 1946.

	1942	1945	1946
Bacteriology	16,736	16,848	17,965
Applied Pathology	82,237		
Clinical Chemistry		49,721	69,059
Serology		42,596	53,303
Sputum		5,347	5,312
Parisitology		1,588	3,278
Blood Bank	9,785	24,974	35,331
Basal Metabolism	3,309	4,479	4,685
Clinical Laboratories	100,875	125,072	146,741
TOTAL	212,942	270,625	335,674

	1942	1945	1946
Transfusions	3,984	6,347	7,509
Number of Donors	1,139	4,392	5,331
Items issued	71,567	66,821	74,522

In 1942 there were 16,775 admissions to the Hospital exclusive of Payne Whitney. The comparable figure in 1945 was 17,589 and in 1946 was 19,079. The Outpatient Department load of total visits was 282,787 in 1942 and 281,628 in 1946. The new admissions to the Outpatient Department were 18,872 in 1942 and 20,058 in 1946. It is apparent that the number of tests performed per patient has grossly increased. While this may be in part attributed to more careful consideration of each patient and more thorough and searching examination, the suspicion must be entertained that a greater part is due to thoughtless exploitation of a facility which is readily available. This attitude may have been encouraged by the inclusive rates for laboratory work which were established first for the wards and semiprivate services and later for the private pavilions of the Hospital.

Particularly disturbing are the increases which have occurred in the use of the chemical laboratories, as is shown by the following table:

	1942	1945	1946
Medical Pavilions	5,419	9,687	13,623
Surgical Pavilions	8,417	12,040	18,541
Private & Semiprivate	2,646	11,018	13,013
Others	5,181	6,113	8,773
TOTAL	21,663	38,868	53,950

Review of the situation both as regards the chemical laboratory and all other sections of the Central Laboratories makes it clear that a significant portion of the increase has been a result of the growth in so-called routine examinations. The complete blood count, urinalysis, and serological test for syphilis, are well established routines and determinations of blood urea and sugar are requested with almost as great a frequency. More recently blood prothrombin and serum proteins have been routinely requested before major operations. For many febrile patients agglutination tests for typhoid, paratyphoid, brucella and proteus X 19 are requested as a matter of course. Blood grouping, bleeding time, coagulation time, and urine cultures are routine in certain groups of cases and the introduction of the Rh factor into the transfusion situation has greatly increased the requests for this determination, not only from the Obstetrical service but also from other divisions of the Hospital.

There is much to be said in favor of such routine examinations. They constitute a safety measure in that they may prevent the omission of some essential procedure. In some cases they may save hospital days for the patient. On the other hand, one wonders whether the requests have been preceded by a thorough study of the patient. Also it is possible that junior members of the staff may expend in collection of specimens time that would be much more profitable if devoted to the study of patients. The effect upon the laboratory staff can be unfortunate if the impression is gained that such orders are given from habit rather than as a result of mature consideration of the case. The matter of cost rightly should be regarded as of secondary importance though it might become crippling should the routine demands continue to grow. There can be little doubt that the subject of the routine examination deserves careful study both in this Hospital and in all institutions like it.

The *Bacteriological Laboratory* has been under the competent direction of Miss Marguerite Leask. Her technicians are thoroughly trained and enthusiastic and the routine is conducted in a manner entirely worthy of a great hospital. The increment of tests in this section has been less than in other branches of the laboratory work. It must be recognized, however, that the numerical basis is less revealing than in other varieties of examinations since new techniques often require extra facilities which in some instances may be quite elaborate.

The *Chemical Laboratory* was under the direction of Dr. William Summerson of the Department of Biochemistry from 1942 to 1944. It was then taken over for a year by Dr. Willy Rieben, who resigned in October, 1945, to accept a position in Berne, Switzerland. The laboratories were fortunate to obtain early in 1946 the services of Miss Ella M. Russ who had held appointments at the Strong Memorial in Rochester and in the U. S. Public Health Service, and who had had wide experience not only in the methods of clinical chemistry but in the training of chemical technicians. Since coming to the New York Hospital she has amply demonstrated her ability. Although she has been hampered by many changes in her staff of technicians and by the need of meeting rapidly growing demands often without sufficient help, she has nevertheless been able to review the techniques in use, revise many of them, train technicians, and to meet satisfactorily the requests in a highly creditable manner. She has had the advantage of an enlarged laboratory with many modern conveniences, a development which was initiated and planned by Dr. Rieben during his term of service. The chemical laboratory in its present status is worthy of the institution, but is still handicapped by the ever-increasing tide of routine work and by a staff of technicians smaller in number than is desirable to meet the demands.

In Chemistry as in other parts of the Central Laboratories the number of technicians has not increased in proportion to the load of work. In the entire service the annual examinations per technician numbered 7,886 in 1942, and 8,833 in 1946. This unfortunate situation is due in large part to the great difficulty in locating adequately trained technical help.

In 1942 Dr. Ralph Nauss, then a member of the Department of Preventive Medicine, was appointed to the staff of the Central Laboratories to conduct the highly technical examinations for identification of *intestinal parasites*. His long experience and excellent reputation as a parasitologist have attracted much work to the laboratory. Increase in usage started with his appointment. Examinations which numbered 1,588 in 1945 more than doubled during 1946 to reach 3,278. Dr. Nauss has recently submitted plans for extending the activities of his laboratory and correlating them with the teaching of clinical clerks and interns.

With the greater use of blood transfusions and with the adoption of a method for preserving plasma in a frozen state, the *Blood Bank* has become an increasingly important facility. Early in the period a room for blood donors was established. On October 1, 1945, the Blood Bank was moved into new quarters on the north side of F corridor as a part of the program of reconstruction The new space was carefully planned and has afforded a section which would favorably compare with any existing blood bank. The rooms are spacious, attractive in appearance and conveniently arranged. A constant friend of the Blood Bank, Mrs. Arthur Whitney, donated the furniture for the waiting room.

Heart Station. Dr. Harold Stewart has established and maintained at New York Hospital a heart station of extraordinary merit. In spite of increasing work without proportionate augmentation of help and of difficulty in retaining trained personnel during the period of the war, the efficiency of the department has not deteriorated. Dr. Stewart has continued his custom of reading each electrocardiogram personally, except during vacation when Dr. Charles Wheeler has supplied for him. The increasing load of work which has made great inroads on his time he has cheerfully undertaken for the good of the service. The Heart Station is so organized that it is covered at all times including nights, week ends and holidays. Dr. Stewart has rigidly adhered to the principle that reports to be of optimal value must be available to the staff promptly.

The increase in the amount of work done by the Heart Station is comparable to that occurring in the Central Laboratory during the period.

	1942	1945	1946
Total EKGs	5545	8602	10,992
EKGs on Private and Semiprivate Pavilions	725	2282	2,912

The increase although apparent on almost all services is particularly striking in the private and semiprivate pavilions where usage has no doubt been augmented by the institution of comprehensive rates for laboratory service.

The members of the assistant resident staff rotate in the Heart Station. They aid materially in the conduct of the work and at the same time gain valuable experience in the reading and interpreting of electrocardiograms.

Electroencephalography. During the last five years the encephalogram has assumed increasing importance as an aid in the diagnosis and prognosis of functional and structural cerebral disorders. Initially the needs of the department of Medicine and of the main hospital were met by the use of the electroencephalographic station in the Payne Whitney Institute. When in 1946 this arrangement proved to be inadequate, a second station was established by the hospital in the laboratories of the Department of Medicine. Dr. Donald J. Simons has been in charge of the electroencephalographic work from the time when the instrument first demonstrated its clinical usefulness.

TEACHING PROGRAM

A. *Undergraduate Teaching.* Instruction of undergraduates in Medicine starts during the second trimester of the sophomore year. A series of introductory lectures are devoted to some of the fundamental principles of case study and to the application of physiology, chemistry, anatomy and bacteriology to the study of disease. Simultaneously there is instruction by lectures, demonstrations and practice in the methods of physical diagnosis. At first these consist of studies of fellow students, later progressing to the examination of patients in the wards. The principles of history taking are also taught in this course and include not only the forms of conventional medical history but also consideration of emotional factors and life situations. In the third trimester of the sophomore year teaching of physical diagnosis under the supervision of experienced tutors is conducted at the bedside either at New York Hospital or at Bellevue or Lincoln Hospital. In the third trimester of the sophomore year an introductory course in Clinical Pathology is given by Dr. Stillman. This consists of lectures and laboratory work. Among the topics discussed are the theory, practice, and application of methods for the examination of urine, blood, sputum, exudates, transudates, spinal fluid, gastric contents, and feces. There is discussion of chemical, morphological, serological, and animal inoculation methods which are of value as diagnostic procedures.

In the junior year the medical students are assigned to the wards of New York Hospital in groups of 25 for a total period of eleven weeks. This group is further subdivided into three parts and each group of 9 men is assigned to a tutor who is responsible for supervising as well as estimating the qualifications of each man in his group. In this course, the chief emphasis is upon the proper use of the methods of case study, of the history, of the consideration of the patient as an individual, the physical examination and the necessary laboratory tests. Much emphasis is placed upon the analysis and synthesis of data thus obtained. Reading is prescribed and numerous group meetings are held. Rotation is established so that each student is able to have experience in general medicine, neurology, tuberculosis, and infectious disease. This course is regarded as fundamental in the training of the physician and forms the basis for case study in whatever specialty the student may engage. The backbone of the student's training is believed to be his own experience with patients as amplified by reading and by contact with members of the hospital and teaching staff. He is therefore given as much responsibility as possible, namely the recording in the hospital records of his own histories and laboratory examinations and a voice in the consideration of each patient assigned to him.

Teaching in the fourth year is conducted in the Outpatient Department. Groups of students representing one-quarter of the class are assigned for period of two months. Each student receives a new patient on each clinic session. A tutor is assigned to a pair of students, the three men forming a team for the care of two new patients and a quota of revisits. Rotation is established so that each senior student obtains experience in general medicine, neurology, and dermatology and in one of several subspecialties such as cardiology, pulmonary disease, allergy, peripheral vascular disease, hematology or diabetes. Group teaching each morning from 9 to 10 is arranged for the discussion of special subjects and topics of interest.

Throughout the course in medicine emphasis is placed upon the principles of therapy although no formal instruction on this subject is included in the curriculum. The therapeutic conferences held jointly with the Department of Pharmacology are most helpful in amplifying instruction in treatment and in maintaining a constant interest in the subject. Much emphasis is also placed throughout the period on the necessity of considering emotions and attitudes of patients to their diseases, and on the evaluation of life situations on the occurrence and development of symptoms.

The teaching of *clinical neurology* has received special attention. Instruction to undergraduates is conducted during the entire four years of the medical curriculum. In the freshman and sophomore years, the student is prepared by the departments of anatomy, physiology, and pathology to appreciate the form and function of the nervous system, and to recognize the gross and histological appearance of damaged nervous structures. In the second year during the same trimester in which he is being trained in physical diagnosis, the student receives a comparable training in methods of neurological examination. In the third year emphasis is placed on the natural history of diseases of the nervous system and in the fourth year interest is focused on the management of patients with such defects.

A feature of novel interest is a course in clinical neuroanatomy which enables undergraduates in their senior year to build a model of the brain and thus to visualize the nervous system in three dimensions and to see the significant relation of one part to another. This course conducted by Dr. Louis Hausman consists of 2 one hour lectures each week followed by a laboratory period for the total duration of two and one half months. The model can be built in leisure time in a period ranging from 60 to 70 hours.

B. *Graduate Training.* The *House Staff* at New York Hospital consists of interns, first and second year residents, and a resident physician. The training of each group is somewhat different and is designed to permit progressive experience which will enable the participants to qualify for certification by the American Board of Internal Medicine.

The *internship* is chiefly a training in the methods of case study. Rotation is established so that each interrn will have experience in both general medical wards, in neurology, tuberculosis, and infectious diseases, as well as the private pavilions. The work is conducted under the tutelage of the resident and the second-year assistant residents, as well as the attending physicians on each ward. Throughout the training psychosomatic relations are stressed. Considerable attention is paid to the art of presentation before groups, and the interns are expected to discuss cases and subjects at the conferences of the Department.

The *first-year assistant residents* are selected from the interns of the preceding year and from applicants of many other institutions. After a year of internship in medicine these men are thought capable of training the new interns, and of acting as guides and instructors both of the interns and of the junior students on the wards. Here again rotation is established in such a way as to permit experience in the various wards, the outpatient department and the private pavilions. Each man is charged with the immediate supervision of a group of patients, the work being supervised by the resident and the attending physicians who act in the role of consultants.

The *second-year assistant residents* are men who are deemed worthy of special training. In addition to their assignments to clinical responsibilities, they are expected to engage in special clinical or investigative work under the guidance of senior members of the attending staff. The subject of their major interest may be in general medicine, in one of its subspecialties, or in fundamental branches such as chemistry, physiology, pharmacology, bacteriology, or immunology. These men are permitted to hold the position of assistant resident for an additional year if their work affords sufficient promise of productivity and development.

The *resident* is chosen each year from the senior members of the House Staff on the basis of his ability in organization, sense of responsibility, knowledge and judgment. He is charged by the physician-in-chief with the detailed operation and supervision of the entire medical service. He is responsible not only for the appropriate care of patients but also for the maintenance of relationships of the service with the administration of the Hospital and with other departments. He always has access to the Physician-in-chief and can call at will any member of the senior staff of the hospital for advice or consultation on special problems. During the five-year period the following men have filled this important position.

John James Smith	July 1941 — July 1942
Stewart G. Wolf	July 1942 — August 1942
Thomas P. Almy	August 1942 — January 1943
Lisgar Eckhardt	January 1943 — July 1943
George A. Wolf	July 1943 — July 1944
Daniel Labby	July 1944 — July 1945
William J. Grace	July 1945 — October 1946
C. Wallace Sorenson	October 1946 — January 1947

Research Fellowships. Shortly after the death of Dr. Walter L. Niles many of his friends expressed the wish to establish a suitable memorial to him at Cornell, where all of his medical life had been spent. A committee was formed consisting of Dr. Bruce Webster, chairman, Mrs. Roger W. Strauss, Messrs. Walter T. Teagle, William H. Jackson, Neal Dow Becker, President Edmund D. Day, and Dr. Malcolm Goodridge. Funds were soon contributed in an amount sufficient to endow a Walter L. Niles Research Fellowship in Medicine to be used for the training of one outstanding young man in medicine each year. This appropriate memorial to a man who contributed most significantly to the development of the Department of Medicine as well as to the entire enterprise of the New York Hospital-Cornell University Medical College is one of the most highly prized assets of the Department. Owing to the conditions of the war, only one fellow has thus far been appointed. This was Dr. Maurice Tulin, a graduate in high standing of the Yale Medical School who through this fund was able to complete a year of training in gastroenterology with Dr. Thomas P. Almy.

The fellowships of the Commonwealth Fund and the Hofheimer Foundation in psychosomatic medicine have already been mentioned. In all, eight fellowships in this important branch are now available.

From other funds the Department of Medicine is now in a position to offer the following fellowships:

One fellowship in peripheral vascular disease under the direction of Dr. Irving S. Wright. This is made possible by funds secured by Dr. Wright from miscellaneous sources for this purpose.

Two fellowships for the clinical and laboratory study of syphilis under the direction of Dr. Bruce Webster. These are supported by a grant from the U. S. Public Health Service.

A fellowship supported by the U. S. Public Health Service for work in chemotherapy under the direction of Dr. Walsh McDermott.

A fellowship in the study of convalescence. This has been held continuously since its establishment by Dr. Donald Whedon. During the war it was supported by the National Research Council and since January 1946 it has been taken over by the National Foundation for Infantile Paralysis. The work is under the direction of Dr. John Deitrick and Dr. Ephraim Shorr.

A fellowship in gastroenterology from the general funds of the Department under the direction of Dr. Thomas P. Almy.

During the year 1946 the Lewis Cass Ledyard Jr. fellowship of the New York Hospital was awarded to Dr. E. Charles Kunkle for the study of pain under the direction of Dr. Harold G. Wolff.

With the large house staff and the research fellowships just enumerated the Department of Medicine is at the present in an admirable position to aid in the training of many able young men. These facilities have been especially appreciated during the time when so many recent graduates were returning from military services.

Conferences. With so large a group of young men in training, it has been thought necessary to offer constant stimulation and instruction in widely varying fields of internal medicine. This has been attempted in the form of conferences held weekly throughout the year. These are not only useful in actual instruction but are also of great utility as a forum for the many young men who take an active part in their conduct. At the end of 1946 the schedule of weekly conferences was as follows:

Monday	Psychosomatic Conference Clinical Pathological Conference — in collaboration with the Department of Pathology.
Tuesday	Psychosomatic Conference Neurology Conference Medical Conference — of the Outpatient Department with Dr. Malcolm Goodridge.
Wednesday	Gastrointestinal Conference Allergy Conference
Thursday	Grand Rounds Neurology Conference Therapy Conference — in collaboration with the Department of Pharmacology.
Friday	Endocrine Conference Psychosomatic Conference Dermatology Conference Pulmonary Conference

The Grand Rounds which have been gradually developed during the last five years perform an additional function as an assembly for members of the large staff of the Department of Medicine. They permit presentation of case studies and problems which arise in connection with the clinical work of the wards, the private pavilions and the Outpatient Department. They have constantly increased in popularity and now have a weekly attendance which varies from 125 to 140.

In addition to the weekly conferences there is held each month during the school year a dinner for members of the Outpatient Department. This is under the auspices of a committee but really owes its guidance and inspiration to Dr. Connie M. Guion. At these functions speakers of national repute from New York and elsewhere are asked to lecture and are heard by large numbers of the faculty and student body. This custom constitutes one of the important cohesive forces in the Institution.

C. *Post-Graduate Training at Bellevue Hospital.* The exigencies of the war necessitated the withdrawal of undergraduate students from the wards of the Second (Cornell) Medical Division at Bellevue Hospital. Experience with this arrangement confirmed an opinion long held that the facilities of the wards and Outpatient Department of the New York Hospital afforded sufficient opportunities for the medical teaching of the entire junior and senior classes at Cornell. It raised again the question whether it was profitable for students to spend the considerable time required to go to and from Bellevue Hospital when approximately equal opportunities were available close at hand. In considering this problem, however, it was realized that the Second Medical Division of Bellevue Hospital offered admirable teaching facilities and that the Cornell University Medical College was under obligation not only to conduct a more than adequate service to patients but also to utilize these facilities to the best possible advantage.

Through a generous subsidy from the Kellogg Foundation, it became possible in 1945 to organize instruction for graduate students at Bellevue Hospital and to open the way for more adequate fulfillment of the obligation of the Medical School in the Second Medical Division. The instruction which started in April 1946 was especially designed for the needs of returning veterans but with the hope and expectation that it would continue to be useful to practitioners who need additional postgraduate clinical opportunities and to physicians from Latin American countries, Europe and Asia who might otherwise have difficulty in obtaining training with sufficient contact with patients. The main course was designed as a clinical clerkship in internal medicine and neurology, the work consisting of daily study at the bedside on the medical and neurological wards. Under this arrangement each student physician is assigned a series of patients and cooperates with the House Staff and the Attending Staff in their care. Bedside experience is supplemented by conferences each week to cover morbid anatomy, clinical medicine, gastroenterology, pulmonary diseases, and the surgical aspects of medical problems. In addition a clinical conference in pediatrics is held weekly under the direction of Dr. Samuel Z. Levine of the Department of Pediatrics. For each student the course is of six-months duration. The teaching program.

however, is continuous and students may be admitted on the first of each month as vacancies occur. At the present time the maximum number of physicians who may register in the course at any one time is limited to 25. At the end of the course an examination is offered by the Department of Medicine and successful completion of this examination is required of those who desire credit in partial fulfillment of the requirements of the American Board of Internal Medicine.

In addition to the six months clinical clerkship a two-week course of lectures, conferences and demonstrations covering the more recent advances in internal medicine and neurology is offered periodically. Two of these short refresher courses were given during 1946.

To activate this graduate program, some of the most able teachers of the Department of Medicine were withdrawn from their work at New York Hospital. Dr. John E. Deitrick was appointed both as director of the course and as Director of the Second (Cornell) Medical Division of Bellevue Hospital. Drs. John J. Smith, George Schumacher, George Kauer, and Alphonse Timpanelli, were added to the already large and capable staff of the Second Medical Division. The aid and cooperation of Dr. Foster Kennedy has been invaluable in the enterprise.

The urgent need for this type of instruction has already been demonstrated, for in the multitude of postgraduate and refresher courses now offered in this country, there are relatively few which provide to graduate students the opportunity for daily supervised contact with patients.

RESEARCH PROGRAM

Investigations of considerable variety were pursued throughout the period. Since a list of publications of the years 1942 to 1946 is appended, no effort will be made to present a complete list of the research projects. The following notes, however, may be useful in characterizing some of the more significant contributions.

Gastric Function. In 1942 studies on gastric function in a man with a gastric fistula of 46 years' duration were undertaken by Dr. Stewart Wolf and Dr. Harold G. Wolff. These represented a continuation and an amplification with modern techniques of the studies conducted more than 100 years ago by William Beaumont on the unfortunate Alexis St. Martin. During a year of intensive work an imposing number of direct observations were made on the effects of food, drugs and the emotions on the circulation, secretory activity, and motility of the stomach. It was demonstrated that anger and resentment caused increased secretion, increased motility, and hyperemia with small abrasions of the gastric mucosa. Long continued resentment resulted in the production of actual ulceration of the surface of the stomach and seemed to furnish a valuable hint concerning the pathogenesis of peptic ulcer. The results of this work were published as a monograph under the title of "Human Gastric Function—An Experimental Study of Man and His Stomach." This is justly regarded as a classic and has received praise from students of disease in many parts of the world.

Headache. In 1942 Dr. Wolff's studies of migraine were already far advanced. These have been amplified and extended to include other forms of head pain. Among the many conditions subjected to scrutiny are post-traumatic headache, headache following spinal puncture with investigation of methods for its prevention and pains in the muscles of the scalp and neck secondary to fatigue. Other subjects for research are pain referable to eye strain and to irritation of the conjunctiva, pain attributable to inflammation or irritation of nasal and paranasal cavities, trigeminal neuralgia, and the effect of centrifugation on head sensations. A short but rather decisive study was also made on cranial arteritis. Together these investigations have placed the clinical study of one of the most common human discomforts on a sound and scientific basis.

Pain. Pain is the commonest of all symptoms and constitutes the most frequent warning that all is not well with the human organism. In the past the study of its mechanisms and even of its exact manifestations has been somewhat desultory. The last five years mark an epoch in the understanding of the nature and clinical manifestations of pain, a consequence of the work of Dr. Harold G. Wolff and his associates in this institution. The studies have been extensive and various and have utilized a large number of techniques, possibly the most important of which is the test devised by Dr. James Hardy, for the quantitation of pain. The study has also involved members of many other departments, of Psychiatry, Ophthalmology, Otolaryngology, Urology, and Surgery. Investigations have been made of the nature of pain from the bladder and kidneys, from the eyes, the nose and para-nasal cavities, and from the contraction of ischemic muscles. Studies have also dealt with the pain threshold in man, the response of pain to analgesic agents, the effect of inflammation on pain, and the relationship of hyperaesthesia and tactile sense to pain. Dr. E. Charles Kunkle has reported his researches in a man who was found to be insensitive to pain.

Cornell Selectee Index. Under grants from the Committee of Medical Research of the Office of Scientific Research and Development a method of quick testing of selectees for the armed forces was developed by Dr. Wolff and his associates. This was elaborated by a series of progressive forms each of which was subjected to validation under field conditions. The forms were known as the "Cornell Selectee Index" and the "Cornell Multiple Choice Word-Association Test." They were used at the time of induction, at reception, and during hospitalization. They were also employed in the study of the effect of personality disturbances on convalescence from upper respiratory infections. The Cornell Selectee Index was used throughout the country in the selection of women for the Women's Army Corps. Both indices were employed in many hospitals and departments of the Army, Navy and Air Forces of the United States and Great Britain. They were reprinted and publicized by the Committee on Medical Research and by the Macy Foundation. Many requests for the tests came from all parts of the United States and from Great Britain, Australia, Canada, South Africa, India, and New Zealand. Interest in the index has also been exhibited by many industrial organizations. A number of medical schools and other colleges have evinced interest in the tests for use in the selection of students. Several social and rehabilitation agencies also have found them useful.

Interest in these tests and in their connotations led to a contract with the Caterpillar Tractor Company for a study of selection and supervision of employees by Dr. Bela Mittelman and Dr. Keeve Brodman. Such work is closely related to the aims of the Department of Medicine insofar as it is concerned with the continuous care of patients. For proper judgment of medical problems during convalescence and rehabilitation actual conditions of employment must be appreciated and medical efforts may well be extended to include the study of emotional and psychological difficulties both in relation to employment and to working conditions.

Effect of Emotions and Life Situations on Organic Function and Symptoms. Dr. Wolff and his associates have long been concerned with the effects of life situations on organic functions. This study received a great impetus from the observations upon gastric function. During the period from 1942 to 1946 the range has been enormously extended. Among the more striking developments were those concerned with observations on nasal functions and structures under varying life situations. These included records of changes in circulation, secretion, size of turbinates, evidences of obstruction, and pain on groups of healthy and of diseased persons. The objective observations were correlated with daily records on the subject's life situations and dominant emotional attitudes and reactions. The associations were striking. It was found that fear and dejection were associated with pallor, shrinking and dryness of the mucous membranes, whereas conflict with resentment and anger were accompanied by swelling, vasodilatation and increased secretion and obstruction. It is believed that sustained emotional states are relevant to disease of the nose and paranasal spaces. These studies were made by Dr. Thomas Holmes, then an assistant resident on the medical service, with Dr. Wolff and Miss Helen Goodell.

Another significant project along similar lines was conducted by Dr. Harold G. Wolff and Dr. George A. Wolf, Jr. on the relationship of life situations and emotions to cardiorespiratory functions. A group of normal persons were observed daily on the ballistocardiograph. Blood pressures, pulse, and respiratory rates were recorded in apposition to psychological and situational data. A group of patients were also observed. The relationship of life situations to the circulation was no less striking than they were in gastric and nasal disturbances.

With the large fellowship attached to the Psychosomatic enterprise this type of investigation can be more rapidly extended. At the end of 1946 projects intended to relate situational data to organic function and symptomatology, were under way in rheumatoid arthritis, nonspecific prostatitis, asthma, and glaucoma. Studies were also started on salivary function and on the production of nausea.

Hepatorenal Factors in Vascular Homeostasis. In 1943 under contract from the Office of Scientific Research and Development, Dr. Ephraim Shorr started researches in the nature of shock which in their development and connotations may be epoch-making. He commenced with in vitro methods for the study of intermediary metabolism of major tissues along lines not unlike those used in former experiments on the action of insulin. It soon became apparent that the secondary stage of shock was associated with significant metabolic derangements frequently irreversible in character and not correctable by the restoration of blood volume by any method. It was believed that these changes were caused by prolonged tissue anoxia resulting in disturbances in the enzyme systems responsible for cell oxidation. Cellular processes such as phosphorylation, urea formation in the liver, deamination of amino acids in the kidney, and acetylcholine formation in the brain were examined in tissues under normal oxidative conditions and at reduced oxygen tensions. Attempts were made to restore normal oxidative conditions to tissues maintained at reduced oxygen tension by means of various metabolic agents. It was found that exposure of organs to reduced oxygen tensions resulted in a sharp reduction of every metabolic function which was studied. Attempts to correct the defect by the use of sodium succinate were unsuccessful. Later studies, however, through 1945 and 1946 were more hopeful. They were particularly concerned with the factors responsible for irreversible shock. It was found that as a consequence of anoxia of the liver a previously undescribed substance was elaborated, and that this acted to relax the terminal blood vessels and to lead to the pooling of blood in the immense capillary bed. It was furthermore shown that this decompensatory liver metabolite could only be destroyed by the action of healthy liver tissue. In shock, the same anoxia which led to the formation of the vasodepressor material resulted in damage to the inactivating hepatic system by which it is ordinarily destroyed. These studies naturally led to an hypothesis of hypertension based on the supposition that the vasodepressor substance from the liver might be the hypotensive component of a homeostatic mechanism for the regulation of blood pressure in which the hypotensive element was being supplied by the kidney.

At the present time the studies on shock have progressed to the point where a dynamic relationship of renal and hepatic factors in the evolution of the shock syndrome has been established. The renal factor is essentially hypertensive in its vascular effect while the hepatic factor is hypotensive. These two appear to be parts of a homeostatic mechanism for the regulation of blood flow and blood pressure. The dominance of the hepatic factor and the damage to the hepatic mechanism for inactivation during shock has been shown to be responsible for irreversibility. Considerable progress has been made in the concentration and purification both of hepatic and renal factors. The studies have been extended to the problem of experimental hypertension with results which seem to indicate the soundness of the concept.

Dr. Shorr has been fortunate indeed in having associated with him in this work an extraordinarily well balanced staff. This includes Dr. Benjamin Zweifach, an outstanding biologist and a nationally recognized authority on the physiology of the blood vessels; Dr. Robert Furchgott, a biochemist whose work has strengthened the Department of Medicine now over many years; and Dr. Abraham Mazur, who has returned from the Chemical Warfare Service to take over the organic chemistry involved in this project. The work has also been greatly aided by Dr. Silvio Baez, of Asuncion Medical College, Paraguay, who is well equipped to carry on the necessary experimental surgery.

Citric Acid Metabolism. During 1942 studies were initiated by Dr. Shorr to elucidate the significance of urinary citric acid. He found that there are several controls of this excretory product. One of them is the group of steroidal reproductive hormones. A definite cycle of excretion was observed during the normal menstrual cycle. The increase in excretion which occurred in the intermenstrual interval was found to be largely due to the influence of estrogenic hormones. Progesterone by itself had no effect, while androgens depressed excretion. A second major influence was found to be the amount of calcium excreted in the urine. The excretion of citric acid appearing to vary directly with that of calcium. The variations were parallel and of about the same order of magnitude. These observations suggested a protective mechanism by which the excretion of citric acid tends to increase as higher excretion of calcium salts may require. By making these salts more soluble, stone formation should be prevented. Even more significant was the disclosure that in certain cases of nephrolithiasis abnormalities in the calcium citrate relationship in the direction of higher than normal calcium excretion and subnormal citrate excretion were demonstrated to occur. It was also found that infection tended to reduce the amount of urinary citrate.

Further experiments indicated that the function of citric acid is concerned with preventing calcium precipitation and that disturbances in citric acid metabolism whether primary or secondary to infection may be critical in the genesis of certain types of kidney stone. The possibility of enhancing the urinary citrate excretion was investigated. The feeding of a variety of citric acid precursors was disappointing. The administration of estrogenic hormone, however, was found to have a striking effect in increasing citric acid excretion and also in lowering the excretion of calcium. It was found to be applicable to women and utilizable for limited periods of time in men without undesirable effect. A second approach was also explored; namely, the reduction of phosphate excretion in the urine by means of aluminum hydroxide. This substrate acted by precipitating phosphate in the gut, by increasing its loss through the intestinal tract, and by reducing correspondingly the urinary phosphate excretion. This medication has the advantage of being utilizable over long periods without harmful effect. It is not unreasonable to expect that further growth of renal stones can be prevented particularly in patients with infected urinary tracts.

The possibility of extending these studies has been improved by the development of a new method for the determination of citric acid in blood and urine by Miss Herthe Taussky in Dr. Shorr's laboratory.

Infra-Red Spectrophotometric Studies of Steroids. At the end of 1941 Dr. Shorr and Dr. Furchgott undertook with Dr. James Hardy and Dr. Carl Herget, a study of the significance of infrared absorption bands in the analysis of steroidal hormones. They used for this work a spectrophotometer devised by Dr. James Hardy and owned by the Russell Sage Institute of Pathology. Early in the study they were able to demonstrate specific absorption bands due to the presence of ketones on carbon atoms 3, 17, 20, 12, and 11. The investigation has been pursued during the entire period from 1942 to 1946. A portion of the work was concerned with steroidal substances extracted from normal and pathological urines by a group working under Dr. Louis Fieser and Dr. Cornelius P. Rhoads at the Memorial Hospital. Chemical studies were also carried out by Dr. Fleischer designed to split the side chain from various starting substances suitable for the synthesis of corticosterone. By extending the number of reference spectra and determining the significance of a number of absorption peaks in the spectrographs more detailed analyses of chemical structure have been made possible. The material of this extensive study is now being prepared for publication in the form of a monograph.

This work on infra-red spectrophotometry is one example of many where the instruments and methods of physical science become necessary to the clinic and to a department such as the medical division of New York Hospital.

Chemotherapeutic Investigations. To Dr. Norman Plummer the Department of Medicine owes the concept and initial organization of a chemotherapeutic enterprise which has become one of its most interesting and productive activities. The work was started by Dr. Plummer at Bellevue Hospital and was transferred to New York Hospital in 1941. Originally the laboratory which was set up for this function was located in the Department of Surgery. It was directed by Dr. Plummer with the advice of a special committee for the study of Chemotherapy consisting of Drs. Andrus, Cattell, Cecil, DuVigneaud, Forkner and Glenn. In 1943 when Dr. Plummer was granted leave of absence to serve on the U. S. Army Commission to study influenza and other infectious diseases, Dr. Walsh McDermott was placed in charge of the chemotherapeutic laboratory which was moved to larger and better equipped quarters on the medical service and became an integral part of the Department of Medicine.

During the five years of this report, developments in the field of chemotherapy have transformed the treatment of many infectious diseases. It is the period of intensive chemical testing of sulfadiazine, of the rapid extension of the use of penicillin, of the discovery and practical application of streptomycin and of general reorientation in the natural history of infectious diseases as modified by chemotherapeutic agents. In these exciting events the Department of Medicine has played a significant role. Among a large number of contributions, a few merit brief comment.

During two years of the period, the department was fortunate in having the services of Mrs. Dorothy Gilligan, an investigator of great ability and resourcefulness. She lent to the enterprise an enthusiasm which stimulated all her associates, established methods of analysis on a sound basis and made two contributions of practical significance.

The first was concerned with the use of alkali as an adjuvant to *sulfadiazine* therapy. This began with studies on the solubility curves of the different sulfanamides which, when applied to clinical management, indicated that alkalinization of the urine of patients receiving sulfadiazine will completely prevent crystalluria and the serious and occasionally fatal renal disturbancies which constitute the most dreaded complication in the use of the drug. This investigation was undoubtedly responsible for the prevention of many accidents and the saving of many lives.

The second contribution was concerned with the hepatic glycuronidation of sulfadiazine and other drugs and its effect upon their pharmacological activity.

Studies of penicillin were numerous and varied. The early investigations were made at a time when the supply was limited and the department was fortunate to obtain small amounts from the Committee on Chemotherapeutics of the National Research Council. The first allocation was made for a study of the use of penicillins in acute infections. Later allotments were for the experimental treatment of bacterial endocarditis, for therapy in syphilis and for investigation of the pharmacology of penicillin with particular reference to methods for prolonging the action of the drug.

During 1944 and 1945, 35 patients with bacterial endocarditis, 72 with infectious syphilis and 134 with neurosyphilis were treated under rigidly controlled conditions. The use of orally administered penicillin was investigated by Dr. Paul Bunn in 50 patients with lobar pneumonia with results comparable to those following intramuscular injections of the drug. Simultaneously a series of combined clinical and laboratory studies of the pharmacology of penicillin were made. The first object was to discover the proper time dose relationships and the results of the very extensive observations were given consideration by the Sub-committee on Venereal Diseases of the National Research Council in planning new regimens for the treatment of syphilis.

The major laboratory investigation during 1945 related to the absorption, excretion and destruction of orally administered penicillin in animals and in man. It was demonstrated that the chief reason for the inefficiency of the drug when given by mouth is a defect in absorption from the small intestine and that efforts to protect penicillin from destruction by the acid of the stomach are quite futile.

Another study was undertaken to determine the optimal dosage for penicillin when given intramuscularly as a single daily injection in an oil-beeswax mixture. For this purpose the duration of detectable penicillin in blood and urine was observed after 380 individual doses of the material. On the basis of the observations a rational regimen was established.

Still another aspect of the work related to the distribution of crystalline penicillin G and X into lymphatic and cerebrospinal fluid, the destruction of penicillin within the body, the penetrability of blood clots by penicillin and the relation of the height and persistence of penicillin concentrations to the inhibition of bacteria in vivo.

In several specific instances and in the aggregate, these studies of Dr. McDermott and his colleagues during 1944 and 1945 had a significant influence on the development of the understanding and practical use of penicillin.

The investigation of the drug is still under way, clinically in continuing observations on bacterial endocarditis and infectious and neuro-syphilis, and in the laboratory on the properties of the five naturally occurring penicillins, X, G, F, dihydro F, and K. Studies in man of the absorption, distribution and urinary excretion of the various pure penicillins were made in the spring of 1946.

It was reported (in agreement with two other groups of investigators) that penicillin K disappeared from the blood much more rapidly than the others. As the urinary excretion of penicillin K was notably low, it was assumed that the material was rapidly destroyed within the body. It was further assumed, on the basis of these findings, that penicillin K would prove to be a relatively inefficient penicillin for the treatment of infections in man.

On more extended investigation of the problem, however, Dr. Ralph Tompsett and Selma Shultz found that the phenomenon of the rapid disappearance of penicillin K from the circulating blood is more apparent than real, and results from a unique behavior of penicillin K when measured by the conventional methods of bioassay. It was further found that the probable explanation for this unique behavior of K rests on the fact that over 90 per cent of it is bound to the plasma protein in contrast to a 46 to 65 per cent degree of "binding" for the other penicillins.

As yet it has been impossible to determine whether the "bound" penicillin is therapeutically inactive. Regardless of its activity, however, the degree of "binding" of a particular penicillin should influence appreciably the distribution, persistence and fate of that penicillin within the body. From the preliminary studies of penicillin K in man it appears that this drug is distributed in a manner distinctly different from that previously thought probable. Investigation of these aspects of the problem is being pursued at present.

In collaboration with Dr. Gladys Hobby and her associates at the laboratories of the Chas. Pfizer Company an extensive investigation has been conducted in experimentally infected animals on the therapeutic effectiveness of the various pure penicillins and material obtained from various stages in penicillin manufacture. The majority of the experiments of this project have been conducted in our own laboratory and, from its inception, the investigation has been closely integrated with the other studies of the properties of the individual penicillins.

Only tentative conclusions are permissible at present, but it appears that there are substances which are removed during purification which appreciably enhance the action of the pure penicillins.

Other laboratory investigations include a study conducted by Dr. Ralph Tompsett in colllaboration with Dr. Paul E. Messier of the Department of Ophthalmology on the penetration of penicillin G into the aqueous humor of the rabbit. It was found that iontophoresis of saline alone, preceding a simple penicillin bath, significantly increases the concentration of penicillin obtained in the aqueous, as compared with the concentration obtained following the bath alone. This suggests that the action of iontophoresis was merely to cause damage to the corneal epithelium. Support for this view was afforded by the observation that a very slight abrasion of the corneal epithelium prior to the penicillin bath resulted in higher concentrations of penicillin in the aqueous than were obtained by any of the other methods tested.

Studies of Streptomycin were instituted in the Department when Dr. McDermott's laboratory was designated by the Chemotherapeutic Committee of the National Research Council to serve as one of the units for the clinical evaluation of streptomycin in infections other than tuberculosis. Approximately thirty patients with various types of infections were studied, including six individuals with typhoid fever. The results were similar to those reported for the entire cooperative study by Dr. Keefer, i.e., excellent results in H. Influenza meningitis, tularemia, and urinary tract infections with gram negative bacilli; and questionable results in brucellosis and typhoid fever.

A major problem of 1946 has been a clinical and laboratory investigation of the therapeutic efficacy and the chronic toxicity of highly purified streptomycin in the treatment of tuberculosis in humans.

This study was initiated under the auspices of the National Research Council and is to be continued under the direction of the Tuberculosis Therapy Study Section of the National Institute of Health and a committee of the American Trudeau Society. In order that this investigation might be continued during the interim between the programs of the National Research Council and the National Institute of Health and the American Trudeau Society, a most generous donation of six kilograms of purified streptomycin was made by Charles Pfizer and Company.

On the basis of experience to date, it appears that toxic reactions will not be sufficiently frequent or severe to invalidate the widespread use of the drug. The majority of the reactions appear to be caused by the antibacterial substance itself, as virtually all types of reaction previously noted from impure streptomycin have also been observed following the administration of the highly purified material.

From the standpoint of therapeutic effectiveness, it can be said now (in confirmation of the previous observations of Hinshaw) that streptomycin exerts a profound effect upon the course of tuberculous infections in humans. The great significance of the discovery of streptomycin lies in the fact that it has made possible the demonstration that a large part of the tuberculous process is chemotherapeutically reversible. The role which will be played by this particular drug in the future is uncertain. There are already indications that the development of strains of streptomycin-resistant tubercle bacilli occurs with sufficient frequency to constitute a major handicap to the success of treatment.

The introduction of a powerful agent for the treatment of tuberculosis immediately raises a number of fundamental questions concerning the disease itself. A laboratory investigation of some of these questions was started in conjunction with the clinical studies of Drs. Rosemary Gorman Smith and Susan Hadley, and Misses Tracy, Dubois and Steinberg. The new techniques introduced by Dr. Dubos have greatly simplified and enlarged the scope of these laboratory investigations, which include the study of new agents of possible value in the treatment of tuberculosis. One of the latter is being studied in collaboration with Dr. John G. Kidd of the Department of Pathology.

Studies in Convalescence. Under a contract from the Committee on Medical Research, a study of certain aspects of convalescence was undertaken by Dr. Deitrick and Dr. Donald Whedon. These investigations were designed to determine the metabolic and functional consequences in a normal individual of bedrest with complete immobilization of the lower extremities. They were important because previous studies had been concerned with persons who had been ill, injured or infected and because the changes which were noted could have been attributable to any one of several factors. Subjects were selected among volunteers from the ranks of conscientious objectors. It was found that immobilization alone could be responsible for large and significant loss of calcium, nitrogen, phosphorus and sulphur from the tissues of the body. It also resulted in impairment of creatin metabolism. A marked deterioration of the cardiovascular responses to tilting was apparent in all of the subjects. The observations on tilting led to a trial of the effects of an oscillating bed to determine whether its use might diminish the undesirable consequences of immobilization. This was found to be the case. The calcium and phosphorus losses were cut in half, creatin metabolism was less impaired, and there was a striking diminution in the deterioration of vascular responses. These results indicated that the use of the oscillating bed might be of help in preventing many of the untoward consequences of immobilization and might lead to more rapid convalescence.

The support of the Committee on Medical Research came to an end in December 1945, and was taken over by the National Foundation for Infantile Paralysis, Inc., as part of its program of study of means for diminishing or alleviating the consequences of poliomyelitis. Because of this support further observations were made possible which substantiated the previous results to an extent that justified the use of the method in the general management of convalescent poliomyelitis patients. The first patient with infantile paralysis was admitted to the metabolism ward November 1946. Preliminary observations indicate that the use of the oscillating bed has resulted in reduction in calcium loss.

The Role of Vitamin E in Progressive Muscular Dystrophy. Dr. Ade F. Milhorat has conducted interesting studies on the pathogenesis of muscular dystrophy. His earlier investigations showed that whereas experimental muscular dystrophy in animals is induced by dietary deprivation of vitamin E or by measures that destroy the vitamin in the intestinal tract, the disease in man is due to an inherited defect. Later researches have related to specific accessory substances such as galactose, marmose, arabinose, and inositol, which appear to be helpful or necessary in the effective utilization of the vitamin. He has accumulated evidence that the spontaneous onset of progressive muscular dystrophy may be due to the loss of the enzyme beta-galactosidase in the intestinal tract. He has also demonstrated that gastric mucin contains a polysaccharide that can serve as a satisfactory source of accessory substances. Dr. Milhorat's laboratory work is conducted in the Payne Whitney Institute and some of his metabolic observations have been made in the Metabolism Ward. The investigation is under the joint auspices of the Departments of Psychiatry and Medicine.

The possibilities for extension of this fundamental research have been greatly increased by a most generous gift from Mr. Philip D. Armour to the New York Hospital for further investigation of diseases of the muscles under the direction of Dr. Milhorat.

Researches on Peripheral Blood Flow. In 1941 Dr. Harold Stewart with Dr. Willis S. Evans started an investigation of peripheral blood flow by a unique method devised by Dr. James Hardy. This was continued by Dr. Stewart with a number of associates until 1945 and was applied to a wide variety of normal and pathological states, including cardiac decompensation, coarctation of the aorta and hypertension before and after sympathectomy. Of some popular interest were his observations in which he showed that smoking of cigarettes causes easily measurable changes in peripheral circulation, skin temperature, pulse rate and blood pressure, but also that these changes can be produced quite as readily by smoking corn silk.

Other Research Activities. Other research projects under way or completed during the period include the following.

The family as the unit of illness and health care was the subject of a protracted study by Dr. Henry B. Richardson. This was based in large part on data accumulated in the Outpatient Department of New York Hospital and was published as a monograph by the Commonwealth Fund. It is an important contribution to a subject which must receive increasing attention by physicians if the ideal of comprehensive medical care is to be attained.

Biotin deficiency in man. With the aid and advice of Dr. Vincent duVigneaud and under a grant from the Josiah T. Macy Jr. Foundation, Dr. Theodore Oppel started this investigation before he left for the service with the New York Hospital Unit. The expectation that patients with biotin deficiency might be discovered was not fulfilled. Attempts have been made therefore to induce the condition by the use of biotin-deficient diets including avidin in the form of egg white and by the oral administration of bacteriostatic drugs which tend to inhibit the growth of intestinal bacteria responsible for the synthesis of biotin. These experiments which are time-consuming and involve complicated techniques are showing satisfactory progress.

Acetylcholine synthesis. Under a grant from the John and Mary Markle Foundation and under the direction of Dr. Harold Wolff, Dr. Clara Torda has relentlessly pursued her investigations in the pathogenesis of myasthenia gravis. Early in her work she was able to demonstrate in myasthenic patients a defect in the synthesis of acetylcholine which has since formed the major focus of her research. During the past three years she has been occupied in studying the effect of a large number of compounds on the synthesis of acetylcholine. Most of these are chemical substances which occur naturally in the animal body. Included among them are epinephrine, extracts of thymus and pancreas, adrenotrophic hormone, thiamin, cocarboxylase, vitamin K, amino acids, fatty acids, malonates, fumarates, succinate and citrate, and decomposition products of nucleoproteins. She has advanced the thesis that during muscular contraction both an acetylcholine-like agent and a curare-like agent are liberated and that deficiency in the former, which characterizes myasthenia gravis, makes more manifest the action of the curare-like substance.

Intermediary metabolism of steroidal hormones was examined by Dr. Ephraim Shorr. His goal was a better understanding of the processes by which the hormones are dealt with in the organism in health and in disease and the isolation of enzymatic reactions by which this intermediary metabolism is controlled. This was approached by a study of isolated tissues and by organ perfusion systems. The investigation although promising was interrupted during the war because of the more pressing demands of the researches on shock.

The role of anticoagulants in the treatment of coronary thrombosis with myocardial infarction. This is a part of a study commenced during 1946 in thirteen widely scattered hospitals conducted under the auspices of the American Heart Association with funds provided by the U. S. Public Health Service. Dr. Irving S. Wright is the national chairman of the committee for the investigation.

The mechanism of thrombosis. This investigation which was started in the autumn of 1946, is intended to include detailed analysis of the thrombosing mechanism as modified by anticoagulants such as heparin, dicoumerol, xanthine, and digitalis. It is under the direction of Dr. Irving S. Wright, and has been made possible by funds which he raised for the purpose.

Observations on the blood pressure in the four extremities during health and in pathological conditions have been made by Dr. Harold Stewart and Dr. Abbott Newman.

The effects of ninth nerve section in carotid sinus syndrome and in glossopharyngeal tic have formed the subject of a joint research by Dr. Harold Stewart and Dr. Bronson Ray.

Clinical studies of constrictive pericarditis have been continued by Dr. Harold Stewart in collaboration with Dr. George Heuer.

Dr. Stewart has also undertaken a number of clinical investigations with other members of the medical staff. They include a study of *the distribution of pain in angina pectoris* with Dr. Henry Carr; *the effect of aging on the electrocardiograms* of patients with congenital dextrocardia with Dr. Edward Shepard; *the effect of digitalis on the persistence of auricular fibrillation* with Dr. Charles Wheeler; a review of the New York Hospital cases of *Wolff-Parkinson-White syndrome* with Dr. William Grace; cases of *ventricular paroxysmal tachycardia* with alternation between ventricles after digitalis and quinidine with Dr. John James Smith; *observations on the Schemm diet* and on the *digitalizing amount of digitalline nativelle* with Dr. Abbott Newman.

Prognosis of syphilitic aortic insufficiency. The cases studied and reported by Drs. Walsh McDermott, Ralph Tompsett, and Bruce Webster in 1942 have been restudied and re-evaluated by Drs. George Reader, Bruno Romeo, and Bruce Webster.

Effects of treatment of cardiovascular syphilis as revealed by pathological studies are being analyzed by Dr. Bruce Webster and Dr. George Reader.

Consequences of concurrent syphilis and tuberculosis are being evaluated by Dr. Leonard Heimoff and Dr. Bruce Webster.

Secretion of gastric mucin in normal subjects and in patients with peptic ulcer is the subject of an investigation which was started by Dr. Thomas Almy and Dr. Daniel Labby in 1945.

Effects of emotional stress on the function of the colon. Dr. Almy, Dr. Beatrice Berle, and Dr. Fred Kern are making prolonged proctoscopic observations in normal individuals and patients with mucous colitis under varying conditions of stress.

Evaluation of the secretin test of pancreatic function. Dr. Michael Lake is continuing in the outpatient department observations on pancreatic enzymes which he started before he entered the Army in 1942.

Effects of urogastrone (extract of pregnancy urine) on gastric function and the healing of peptic ulcer are being studied by Dr. Reid Heffner, Dr. Sidney Weintraub, Dr. Fred Kern, Dr. Robert Page, and Dr. Thomas Almy with the help of Mrs. Jeannette Gutmann.

Function of the esophagus with special reference to cardiospasm is being examined by Dr. Stewart Wolf and Dr. Thomas Almy.

The consequences of *cranial arteritis* with an evaluation of the syndrome of "temporal arteritis" have been examined by Dr. Edwin D. Kilbourne and Dr. Harold G. Wolff.

Effects of vagotomy on gastric function have been analyzed in a fistulous human subject. The interesting observations of this study were reported by Dr. William D. Andrus of the Department of Surgery and Dr. Stewart Wolf.

Studies on hypertension. Correlation of renal blood flow with emotions and life situations is being studied by Drs. John Pfeiffer, Herbert Ripley, Stewart Wolf, and Harold Wolff.

Chemical and immunological studies of low ragweed pollen extract have been presented for publication during 1946 by Dr. Horace Baldwin, Dr. Paul deGara, Dr. Halla Brown, and Dr. Arden Moyer. This work was done under grant from the Surdna Foundation.

A method for the more rapid immunization of patients suffering from hay fever has been developed by Dr. Mary Loveless as a result of many years of work. During 1946 she has been studying the relevance of the ophthalmic test to the dosage schedule for patients with hay fever.

Coexistence of two antibodies for crystalline insulin in human subjects has been demonstrated by Dr. Mary Loveless. Serological, intracutaneous and ophthalmic estimations of reaginic and thermostable antibodies have thrown light upon the mechanisms of allergy and immunity in cases of insulin sensitivity and refractoriness.

Quantitative precipitin analyses have been made by Dr. Loveless on sera from a case of severe serum reaction in accord with the methods developed by Dr. Michael Heidelberger at the College of Physicians and Surgeons, Columbia University.

Immunological and clinical studies on fractions of low regweed pollen prepared by Dr. Frank Stevens were carried out by Dr. Mary Loveless.

Effectiveness and mode of action of new "antihistaminic" drugs have been studied by Dr. Mary Loveless in 48 cases of penicillin allergy and in many other allergic conditions.

Effect of ultra-violet radiation upon the antigenicity of low ragweed pollen extract was examined by Dr. Halla Brown. No apparent disturbance in antigenicity followed radiation.

Incidence and consequences of mycotic infections in man have been studied intensively during the entire period by Dr. George M. Lewis and Miss Mary Ellen Hopper.

Studies of the antibiotic effects of a purified filtrate of Bacillus XG on various fungi have been undertaken by Dr. George M. Lewis with the aid of Miss Mary Ellen Hopper and Mrs. Martha Wharton under a grant from the John and Mary Markle Foundation.

Studies of penicillin sensitivity have been made by Dr. George Lewis and Dr. Frank Cormia. It appears that prior dermatophytic infection is accountable for the sensitivity of some individuals to penicillin. In guinea pigs Dr. Lewis and Dr. Cormia were able to demonstrate cross immunization between penicillin and tricophyton.

Ringworm of the scalp which continues to be a prevalent disease in New York City has occupied the attention of Dr. George M. Lewis and his staff. Clinical trial of a number of new drugs has been undertaken.

Studies of the action of thiouracil and related compounds have been continued by Dr. Shorr. The introduction by Astwood of 6 normal propyl thiouracil, a drug possessing the therapeutic qualities of thiouracil with a lower incidence of toxic reactions, offers hope of wider applicability of medical management of thyrotoxicosis.

Metabolic abnormalities in a case of sprue like diarrhoea in lymphosarcoma were studied by Dr. Ralph Tompsett with Dr. Harold E. Harrison of the Department of Pediatrics.

Significance of the pharyngeal reflex in the pathogenesis of bronchiectasis was examined by Dr. Claude Forkner.

The role of bronchial veins in the pathogenesis of hemoptysis was investigated by Dr. John E. Deitrick.

Effect of extremely low body temperatures on the resistance of experimental animals to pneumococcus and to the tubercle bacillus was studied by Dr. Carl Muschenheim.

Metabolism in anorexia nervosa was investigated by Dr. Ade T. Milhorat.

Researches in certain aspects of chemical warfare were conducted during the war years under contract from the National Research Council to the Department of Medicine. The work which was extensive and led to significant contributions was carried out by Commander Marion B. Sulzberger, U.S.N. and Dr. Rudolf Baer in laboratories lent for the purpose by the Department of Physiology.

COMMENT

Before concluding this report, it may not be inappropriate to attempt some evaluation of the assets and accomplishments of the department, to outline inadequacies, deficiencies and limitations and to indicate trends or directions which should be followed for improvement and advance during the next five year period.

Assets and Accomplishments. The plant and equipment of the department are among the best in the world. Its physicians are well trained, in not a few instances are nationally outstanding and in general are devoted to the work and aims of the institution. Its nursing, social service, and dietetic management are equalled by only a few hospitals. Financial support in the form of the Joint Budget of the New York Hospital-Cornell University Medical College is sufficient to provide a staff for the routine care of patients and for the adequate teaching of medical students in a highly diversified and widely extended service.

There has been established at Cornell in the field of undergraduate instruction a curriculum, which without possessing many original features compares favorably with that of other institutions of first rank. In neurology, systematization and carefully planned progressive presentation of subject matter have resulted in preeminent training for medical students and house staff. During the five year period, a graduate program of considerable promise has been established for internes, residents and fellows at New York Hospital and a practical and in some respects unique postgraduate course has been started at Bellevue Hospital.

Because of the excellent reputation of the staff and the extensive outside support which it has attracted, the research program is on a sound basis and has included the study of many diverse subjects. The department is at present leading in the development of psychosomatic medicine, both in its practical applications and in constructive understandable investigation of the relations of emotions and life situations to disease. In the study of metabolic disorders and metabolic and chemical problems, the department has for many years enjoyed an enviable reputation which has been greatly enhanced by its closely integrated association with the Russell Sage Institute of Pathology. This is being maintained and extended by researches in numerous and various fields but particularly by dramatic discoveries concerning metabolic derangements in shock and hypertension. Endocrinological researches have been fundamental and various and have placed the department in the forefront of advance in an important field.

During the five year period there has been a record of fine accomplishment in the field of chemotherapy and a healthy beginning in the study of syphilis, tuberculosis and to a lesser extent of other infectious diseases. Particularly gratifying has been the investigation of the use of streptomycin in tuberculosis, a development which has become possible by the fortunate combination of an unusually qualified staff, a laboratory well equipped and organized for chemotherapeutic study, an admirable ward for the reception of selected patients and most generous support from several sources.

Comprehensive investigations on the general subject of pain conducted in the department during the past five years have contributed vitally to an understanding of the most common symptom of disease. Studies on the pathogenesis of muscular dystrophies and myasthenia gravis have been productive and give promise of rapid extension. In cardiology, peripheral vascular disease, hematology, gastroenterology and arthritis foundations have been laid in the outpatient department for clinical investigation.

That the spirit of research is alive in the department is apparent from these accomplishments. It may also be documented by many other meritorious but less dramatic contributions to widely varying aspects of the general field and special branches of medicine and also from the participation in research projects of a considerable and increasing number of the younger members of the staff.

Deficiencies and Limitations: Among a considerable number of defects in the Department brief mention will be made only of the following: insufficient development of some subdepartments, inadequate endowment for research, lack of laboratory space, insufficient full-time staff, undesirable and unnecessary segmentation of medical care and defective organization and suboptimal service in the outpatient department.

1. Need of developing subdepartments.

From a clinical standpoint, development of a department of medicine in an institution so large and important as the New York Hospital-Cornell University Medical College should emphasize competence and expertness in all subspecialties. While it is unlikely that all subdivisions will progress at the same rate or that original contributions will be made by all of them, the goal should be a well balanced organization in which all essential parts are worthily represented. Each subdepartment should be equipped not only to offer expert diagnosis and treatment and competent instruction of undergraduate and graduate students but also to advance knowledge of the subject by investigation and by stimulating specially qualified students to undertake original research.

According to these somewhat exacting criteria, the department is deficient in important respects. Several subdepartments while fulfilling all routine demands of medical service and undergraduate teaching require more emphasis upon fundamental research as well as extension of correlations with other divisions.

Allergy as a subspecialty of medicine needs thorough revision not only here but in similar institutions. Without abandoning or depreciating the practical applications in hay fever and other forms of clinical hypersensitization, the emphasis should be shifted to a study of the principles of immunity as they apply to general medicine. Closer correlations with the department of immunology in the medical school, with the infectious disease ward and with similar activities in pediatrics and other clinical departments are important in activating a worthy enterprise in applied immunology.

The clinical care and investigation of diseases of the skin is an integral part of medicine. In the past this specialty has depended largely upon accurate but superficial clinical observation and the application of specific or more often empiric treatment. For routine operation, the maintenance of an appropriate station in the outpatient department has not required elaborate equipment or great financial support. Largely as a result of this situation only meagre provision has been made for the dermatological department. It has developed much more slowly than other enterprises which are intrinsically not more important and it has been inadequately prepared to take an appropriate part in the advance which is now indicated. Certainly one of the major defects in the structure of the department of medicine at the present time is the retarded state of the dermatological enterprise. Among other things it needs larger staff with more varied attainments, financial support for graduate teaching and research and closer correlations with applied immunology and other subdepartments.

2. Insufficient Endowment for Research. Because of the diversity of departmental activities, endowment funds are not more than sufficient for the conduct of routine medical care and the adequate teaching of medical students. For the development of investigation or the promotion of new enterprises, the department is almost entirely dependent upon the receipt of special gifts. That it has been extremely fortunate in obtaining support for special activities is shown by the following list of foundations, agencies and individuals that have contributed to one project or another during the five year period.

American Medical Association
Philip D. Armour
Mrs. McCoskey Butt
Belgian American Educational Foundation

Carnegie Corporation
Caterpillar Tractor Company
Ciba Pharmaceutical Products, Inc.
Commonwealth Foundation
Mrs. M. L. Crofts
Dazian Foundation
Dula Foundation
Ettinger Fund
Dr. Claude Forkner
Mrs. S. B. Grimson
Barbara Henry Research Fund
Lester N. Hofheimer Foundation
Kellogg Foundation
Samuel H. Kress
Lambert Pharmacal Company
Lederle Laboratories
Eli Lilly Company
Josiah Macy Jr. Foundation
John and Mary R. Markle Foundation
Leavelle McCampbell
Milbank Memorial Fund
Hoyt Miller
National Foundation for Infantil Paralysis
National Research Council
National Institute of Health
Office of Scientific Research and Development
Charles Pfizer Company
Clarence S. Postley
The Research Corporation
Schering Corporation
Schieffelin and Company
Arnold C. Schueren
Searle and Company
Sharp and Dohme
Sterling Foundation
Strategic Services
Henry S. Sturgis
Surdna Foundation
Wallace Laboratories
John Wyeth and Brother

U. S. Public Health Service
United Hospital Fund
Marie Zimmermann

While there can be no assurance that such support will always be as available as it now is, it may be hoped that the great prestige of the institution and the acknowledged scientific leadership of many of the staff in the department of medicine will continue to attract funds from many sources for special projects. It must be emphasized, however, that the uninterrupted existence of the present important research program is dependent upon continued support of outside agencies and that additional funds from similar sources are prerequisite to the establishment of any new enterprise. Thus, most of the desirable developments in dermatology must await large gifts for the specific purpose.

3. Lack of Laboratory Space. This may form the most serious obstacle to the natural expansion of the department. At the present time, and without any of the desirable developments which have just been mentioned, the available laboratories are utilized to almost complete capacity. The difficulty can be overcome only in part by rearrangements or by discriminating selection of projects. Eventually and probably within the next two years, the department of medicine will be seriously handicapped if more space for investigation cannot be found.

4. Insufficient Full Time Staff. Although the professional staff of the department is so large as to be unwieldy, the *lack of readily available personnel* represents one of the chief limitations in departmental development. So complicated an enterprise requires the uninterrupted service and devotion of many men of diverse talents. Only a few are now devoting their entire time to the work of the institution while most of the staff have their major interest in practice a large part of which lies beyond the confines of the hospital. No endowment in any medical school in this country is sufficient to bring to an institution on a full time basis all the professional help that would be needed for optimal development. On the other hand, if enterprises of superior merit are to be developed in gastroenterology, in allergy, in pulmonary diseases and in other subspecialties, and if undergraduate and graduate teaching is to be at the highest possible level many more first class partici-

pants devoting most or all of their time to the work of the institution will be needed. In general, accretion of first class teachers and investigators has been slow due chiefly to the fact that many of the most promising men trained in the department have found it expedient to leave because of economic pressure and the need of more salary than the endowment would justify. For optimal development it seems necessary to devise means by which more men of extraordinary talents and great promise may become stably attached to the work of the department. It is suggested that a diagnostic clinic of the type seriously studied by a committee of the Medical Board during 1946 might contribute substantially to this long felt need.

5. Segmentation of Medical Care. Patients who enter the ward of our hospital are given every attention which science and the art of medicine can devise. They are then referred to an outpatient department where their management tends to be more desultory and less continuous, and where it is conducted by physicians who have not seen them in the wards. Home care is usually left almost entirely to the patient's own devising. Too little contact exists between the practitioners who see the patients in their homes and the doctors who have treated them on an ambulant basis in the clinic. In this institution as in others, convalescence and rehabilitation receive scant attention.

6. Defects in Medical Outpatient Department. Although in its present state the medical outpatient department is one of the more effective of its kind, it possesses few features which afford complete satisfaction and many which are deficient and require extensive revision, reform and development. The problems of ambulant care are so great that they cannot be appropriately discussed in this report. Indeed, the difficulties of the outpatient service cannot be solved by any one department but must await joint consideration of the several divisions that compose it. A few of the requirements that concern the medical department may be listed:

a) more physicians who are able to devote large blocks of their time to the care of ambulant patients.

b) better organization of the admission of patients

c) arrangements for prompter diagnosis and elimination of unnecessary waiting of patients at various stages of the examination

d) closer integration of the medical outpatient department with the ward service, with other departments and with the physicians and welfare organizations in the district which lies about New York Hospital

(e) greater attention to the individual and to the emotional and situational aspects of disease

(f) better organization for graduate and undergraduate teaching.

Trends.

In an organization so complex as a modern department of medicine, progress may and should be made simultaneously in many directions. A few of the more obvious trends may be listed for brief comment.

1. Clinical science, the study of disease at the bedside and in the clinics should be developed and extended.

2. There should be more intensive application of physical sciences to the solution of medical problems.

3. At the same time there should be increasing attention to the patient as an individual, to interpersonal relations and to the environment as factors in disease.

4. There should be increasing emphasis on comprehensive and continuous medical care.

Clinical Science.

Case studies in which observations and deductions are made on people who are sick have laid the foundation of our knowledge of disease. During the years, their scope has been enormously extended but they remain as the basis of clinical teaching, the chief expedient in the care of patients and perhaps the most important inspiration for research in medicine. Enthusiasm for other activities must not minimize their superlative importance in the teaching and practice of medicine or in the objectives of a medical department.

Applications of Physical Sciences.

During the past 30 years, great emphasis has been placed upon the application of physiological principles and physical science to the study of disease. Modern departments of medicine have been organized with this aim as a primary objective. Teachers of medicine have been selected because of their pre-eminence or promise in the field of applied science; extensive laboratories for chemical and physiological research have been established; young men of ability have been encouraged to devote themselves to physical science in medicine. Among educators there would probably be agreement that this emphasis has been justified by the scientific contributions from departments so organized. Certainly, the department of medicine at New York Hospital-Cornell University Medical College has been developed in conformity with this ideal and its record of accomplishment offers encouragement for continuance of the objective.

The situation is not static and extension of applied science in medicine under modern conditions may depart widely from the routine care of the sick and from the study of medicine at the bedside. The methods of science are daily becoming more complex as more and more of the new procedures and techniques of physics and chemistry are applied to the study of disease. Atomic physics, the structure of the molecule, electron microscopy, ultra-violet and infra-red spectro-photometry are but a few of the subjects which have become relevant to the investigation of medical problems. Questions asked by the alert and curious physician at the bedside frequently become intricate problems of chemistry and physics when a solution is sought. Since the physician is chiefly trained in the care of the sick he can seldom qualify as more than an amateur in physical science. While he may define problems, he requires expert help in great variety to solve them. If a department of medicine in an institution such as ours is to accomplish optimally, it is not sufficient that it be led by physicians of broad vision and profound comprehension. It will also require occasionally or over long periods, the services of highly skilled physicist, chemists, biologists, pharmacologists or psychologists. On many occasions its work will be closely integrated not only with the departments of chemistry and physiology in the medical school but also with those of physics, psychology and engineering in the University.

Research of the department in physical science must be along lines which will permit establishment of laboratories equipped with the latest scientific apparatus and manned by scientists most expert in its use. Such a development implies an expenditure for research much greater than has previously been customary in clinical departments.

Emphasis Upon the Patient as an Individual.

Such preoccupation with investigations in chemistry, physics and other branches of physical science has at times obscured the fact that the role of the physician is an intensely personal one in which studies of molecular structure may be of less immediate importance than those of human behaviour and interpersonal relations. It is apparent that in the organization of a medical department, physical scientists should constitute only a part of the staff and that from the standpoint of teaching as well as the welfare of human beings in distress, men of broad sympathies, social consciousness, insight and tact will be of at least equal importance. It has also become evident and particularly in the operation of our own department that research in medicine is by no means limited to physics and chemistry but can be applied with equal advantage to psychology, anthropology, sociology or to human behaviour.

Comprehensive and Continuous Medical Care.

In the teaching as well as in the practice of medicine, there should be increasing emphasis on continuity and comprehensiveness in service which will include prevention as well as cure, will consider in perspective with physical defects the psychological and emotional aspects of disease, will foster methods for more complete after-care and will extend the activities of an institution such as ours into the community which it is serving. These conditions are not easily reconcilable with the undesirable segmentation of medical effort apparent in this and other similar institutions.

There is great need to avoid barriers between separate departments of practice. Divisions of surgery, gynecology, medicine, pediatrics and psychiatry are useful chiefly from the standpoint of organization and detail. In spirit and in actual operation they should be easily surmountable. It has been said that at the New

York Hospital-Cornell University Medical College such barriers are less marked and less inviolable than in many comparable institutions. Certainly, there are in our institution numerous examples which illustrate the practicality as well as the desirability of joint enterprise. The difficulty, however, is not entirely interdepartmental. Elimination of intradepartmental barriers is equally important and service to patients should proceed without interruption from wards to outpatient clinics and to supervision in the home.

Achievement of satisfactorily comprehensive and continuous medical care must await sweeping changes both in the curricula of medical schools and in the pattern of medical practice. In the meantime it is a worthy goal toward which the department of medicine may aspire.

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